



AIR CONDITIONING & REFRIGERATION News

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Refrigerator Sales Jump 26% In January '53

NEMA Figures Show Increase Of 90,000 over Jan. '52; Larger Size Most Popular

NEW YORK CITY—Refrigerator sales got off to a rousing start in 1953, showing a 26% gain in January over the same month last year, the National Electrical Manufacturers Association's figures for sales by 17 member firms indicate.

Total world sales by these firms numbered 347,047 units as compared with 257,297 in January, 1952. Of these 325,180 were sold in the United States, a 24% gain over last year. Canadian sales scored a 330% gain over last year, jumping from 2,103 units in January, 1952 to 9,046 this last January. It was Canadian sales that added the extra 2% on the world sales increase.

Sales to other foreign countries, on the other hand, slipped slightly. They were 12,935 in 1952 and 12,815 in 1953.

January, 1953 sales were 29% higher than in Dec. 1952, with domestic sales rising 30% and Canadian sales up 33%. Other foreign sales dropped 2.3%.

In comparison with January, 1952, it was noted that substantial increases were made in the sale of larger size units. Where the 8-cu. ft. box was the most popular last year, the 10 and 9-cu. ft. units are both selling at a higher rate this year.

A new company was added to the reporting list in January—Bendix Home Appliance Div. of Avco Mfg. Corp.

Ashbaugh Says Factory, Distributor Inventories Down 25% from 1952

CHICAGO—J. H. Ashbaugh, vice president of Westinghouse Electric Corp., told the instalment credit conference of the American Bankers Association that present factory and distributor inventories of appliances are down 25% from the year-ago level.

Also, he predicted that dollar volume of electrical appliance sales will rise 50% in the next five years and should double in the next 10.

Ashbaugh said the industry is now better able to gear production to demand than in the past. He explained that this is possible through use of controls developed as a result of serious inventory situations which plagued the industry during certain intervals in the last few years.

The Westinghouse executive reported that a study made by his company indicated that business activity may decline in the months ahead.

"We project that this decline may go as low as 8% to 10% in gross national product, disposable income, and general business," he said. "This decline after 1953 may extend to a low point in 1955, and then the curve starts up again. By 1957 or 1958 it is back to the same level as 1953."

However, Ashbaugh declared, "in the next 10 years, the appliance business will double in spite of the dip predicted for early in the period."

"By 1958, the appliance industry will sell 14,000,000 units of major appliance products. In 1952 the industry sold 11,000,000 units."

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INSIDE DOPE

by GEORGE TAUBENECK

Story of the Week
News Story of the Week
Add Sports Notes
A Program for Housing

Story of the Week

For a \$500 fee Congressman Bilge-worthly consented to address an Annual Banquet. He arrived, was greeted, and took over the platform. On and on he talked.

Two members of the Society managed to sneak away.

"Has he finished?" the first member greeted the second escapee.

"Long ago. But he is still talking."

News Story of the Week

Now we can go back to reading Dickens and Shakespeare.

The news we've been waiting for has been printed, to wit:

A Northwest Airlines stratocruiser arrived in Seattle six minutes before it left Tokyo—official time.

That's right. Your eyes don't deceive you. Intervening time zones—and the loss of 24 hours while crossing the International Dateline—account for this True Story. Coming up: to Mars yesterday.

Add Sports Notes

In a recent issue of the University of Illinois Alumni News six photographs of "all-time prominent Illini" are grouped. Only one is an athlete:

Albert Penn, president of Penn Controls.

Under his photo in a baseball uniform is the caption: "Albert Penn '09 always is considered one of the few really great Illinois infielders."

The following could be a sporting proposition. On Ohio's highway 20 last week we spotted this roadside sign:

"STOP. Eat and get gas."

A Program for Housing

The "forgotten man" of housing has been given the highest priority in a program designed to extend home ownership to millions of lower and middle income families.

Emanuel M. Spiegel, president of the National Association of Home Builders, is the sponsor.

His program calls for lower down payments, a longer payment term, adequate financing for modernization of existing homes, and reorganization of the government's housing agencies in order to give greater service to the public.

Spiegel will submit eleven basic recommendations to Congress and the Eisenhower Administration.

The proposed program is designed to enable the industry to maintain an annual production of more than 1,000,000 new homes—and to rehabilitate each year at least 750,000 older units—which are structurally sound, but in need of modernization and repair.

The key to the entire program is an adequate flow of mortgage capital at terms adapted to the needs of the "mass market"—at low down payments and longer amortization terms and with low monthly carrying charges.

Mr. Spiegel believes this may require an increase in interest rates on loans guaranteed by the Veterans' Administration, and perhaps on some mortgages insured by the Federal Housing Administration—plus a revision of FHA down payment schedules, which currently neglect the credit requirements of non-veteran families of modest means.

"The volume of production appropriate to a prosperous economy, currently estimated at 1,000,000 units, cannot be long continued under present high down payment requirements," he declares. "The FHA down payment requirements should be amended . . . to recognize today's conditions, by making adequate mortgage financing available for the 'forgotten man'—the non-veteran of modest means."

"For example the purchaser buying a \$12,000 to \$15,000 house should

(Concluded on Page 8, Column 1)

Will Residential Air Conditioning Boom Run Into Snag of Power Shortages?

Detroit Edison Ready for Single Phase Units

DETROIT—"If it helps the customer live electrically, we're for it."

That, in the words of E. O. George, manager of sales, sums up the attitude of the Detroit Edison Co. towards the expected boom in year-round residential air conditioning.

This well known electric utility has no fears that its generating capacity will be taxed if a sizeable number of its 900,000 domestic customers install year-round systems.

"In fact," George points out, "our peak load comes in November, December, and January, and we'd like to fill up the valleys that occur in the summer months."

However, air conditioning does not represent the completely ideal load. Virtually all air conditioning equipment, for example, will be turned on at the same time—when the weather is hottest.

"But we aren't afraid of the load," George reiterates.

On the other hand, this progressive utility has no immediate plans for active promotion of year-round resi-

dential air conditioning, chiefly because it doubts there is much market for it hereabouts at the present time.

(Room units are a different matter, however, and Detroit Edison is pushing them strongly. Following the pattern which has proved so successful with other appliances, the utility has been offering leading brands of window units to its employees at considerable discount for the past two seasons—1951 and 1952.)

"For every appliance we sell to one of our employees, the independent dealer will sell four," George declares. Members of our own organization who become enthusiastic users of an appliance are its strongest boosters among their friends and neighbors and our customers."

Even without promotion, Detroit Edison would still welcome the year-round residential unit, he indicates.

Are Detroit Edison lines, however, ready now for the 220-volt 2 to 5-hp. motors required to operate the average year-round home unit?

(Concluded on Page 3, Column 1)

Miller Mfg. Co. Acquires All Bonney Forge Stock

DETROIT—Miller Mfg. Co. here, producer of special service tools for the automotive industry, announced last week that it has acquired all of the outstanding stock of Bonney Forge & Tool Works, Allentown, Pa.

Joseph W. McDougal, Miller's president, said his firm will continue full operation of Bonney and maintain its established sales and merchandising policies. Bonney will be operated as a subsidiary of Miller, it was stated.

The move was described as an important step in Miller's program of enlarging and diversifying manufacturing and market facilities.

Miller has been a leading special

(Concluded on Page 4, Column 4)

In New DMS, Mfrs. Can Order Metals Without Ratings

WASHINGTON, D. C.—The new Defense Materials System that will replace the Controlled Materials Plan on July 1 if Congress extends the priorities and allocations authority of the Defense Production Act was announced recently by the National Production Authority.

The new system will apply only to deliveries of steel, copper, and aluminum to the Defense Department and the Atomic Energy Commission for defense programs identified by the symbols A through E.

This means that Class B product manufacturers no longer have to file

(Concluded on Page 4, Column 4)

96-Unit Development In Detroit Suburban Area Offers Year-Round System

DETROIT—Year-round air conditioning is being used as the chief promotional feature of a 96-unit home development now under construction in suburban Oak Park here.

Chrysler-Airtemp year-round systems in 2-hp. and 3-hp. capacity, depending on the size of home being

(Concluded on Page 21, Column 1)

Hussmann Advances 5 Executives of Parent Firm, Subsidiary

ST. LOUIS—Five promotions were announced by Hussmann Refrigerator Co. and its sales subsidiary, Hussmann Refrigeration, Inc., following recent meetings of the directors of both organizations.

The board of directors of Hussmann Refrigeration, which controls the sale of food store refrigerators produced by the parent company to all outlets other than government contracts, elected officers as follows:

W. B. McMillan, president and chairman of the board of Hussmann Refrigerator, was elected chairman of the board of the subsidiary, in addition to his duties with the parent company.

W. J. Stelpflug, vice president of

(Concluded on Page 4, Column 5)

NOTICE!

To Manufacturers of Air Conditioning Equipment

If you have not as yet received a questionnaire requesting information on the self-contained air conditioning units (room air conditioners, complete home comfort cooling systems, or "store type" package commercial unit air conditioners) which you manufacture, please write today to AIR CONDITIONING & REFRIGERATION NEWS, 450 W. Fort St., Detroit 26, Mich. requesting that a questionnaire be mailed to you.

This information is for a listing of your self-contained air conditioner models to be published as one of the features of the April 13 Special Air Conditioning Issue of AIR CONDITIONING & REFRIGERATION NEWS.

If you have received a questionnaire and have not as yet filled it out and returned it, please do so as quickly as possible. If you are a manufacturer of such equipment and have not received a questionnaire, request one immediately.

Detroit Debates Licensing of Auto Cooling Workers

DETROIT—An amendment to the Detroit city refrigeration safety ordinance that would exclude automobile air conditioning systems from its coverage has been proposed by the Automobile Manufacturers Association and opposed by the Refrigeration and Air Conditioning Contractors Association of Detroit.

Representatives of the two groups met with officials of the city department of buildings and safety engineering recently to discuss the amendment. They could not agree on the amendment as drawn up by Chief Safety Engineer Frank Drogosch and could not reach any compromise.

As a result further discussions will be held between the two industry

(Concluded on Back Page, Column 1)

York Offers 14-Model Room Cooler Line From 1/3 to 2-Hp. Size

DETROIT—What York Corp. officials claim is the only "complete" line of room air conditioners on the market was presented to Michigan dealers and distributors here recently.

The line consists of 14 models in 1/3, 1/2, 2/3, 1, 1 1/2, and 2 ton window units and 1/3, 1/2, 1, 1 1/2, and 2 ton console units.

Walter Landmesser, York manager of retail sales, who made the presentation, emphasized that the line was competitively priced and contained features not offered elsewhere.

Suggested retail prices for the line are as follows:

Window Units		
Model A30	1/3 hp.	\$229.95
Model A50S	1/2 hp.	\$279.95
Model A50D	1/2 hp.	\$319.95
Model A75	2/3 hp.	\$379.95
Model A75M	2/3 hp.	\$399.95
Model A75MR	2/3 hp.	\$439.95
Model A100M	1 hp.	\$459.95
Model A100MR	1 hp.	\$499.95

Consoles		
Model A75CM	2/3 hp.	\$519.95
Model A75CMR	2/3 hp.	\$559.95
Model A100CM	1 hp.	\$619.95
Model A100CMR	1 hp.	\$659.95
Model 150	1 1/2 hp.	\$821.00
Model 201A	2 hp.	\$975.00

Landmesser noted that all models feature York's "sealed in flame" hermetic system. They are all covered by York's five-year guarantee on the complete system.

Eight of the models (those designated with the letter M) are equipped with modulation control, which

(Concluded on Page 8, Column 4)

N. Y. State Law Strikes Blow at Transshippers Of Electrical Appliances

ALBANY, N. Y.—The State Assembly has struck a blow at transshippers of electrical appliances.

By a vote of 123 to 23, the body passed a bill which would make it a misdemeanor for a dealer to sell electrical appliances from which the manufacturer's serial number has been removed or defaced.

The bill does not apply to the sale of used appliances or where there is a written bill of sale.

The measure was set for final passage in both houses. However, the Senate was erroneously informed

(Concluded on Page 4, Column 3)

Omaha Distributor Says '53 Will Be Biggest Year Yet; Airtemp Plans New Air Cooled Models

OMAHA, Neb.—A bright future for the air conditioning industry was forecast at the recent sales and merchandising conference conducted by Sidles Conditioner Air Co. located here.

Albert Koenig, Sidles general manager, predicted that "1953 will be the biggest year in the history of air conditioning." And Edward Nash, general merchandising manager of Chrysler Airtemp Sales Corp., a division of Chrysler Corp., said that air conditioning will be a "necessity" in homes by 1960. F. J. Loughna stated that air conditioning now amounts to approximately 10% of the price of

a low-cost house, but that this is going to be lowered.

Nash announced that his company plans to introduce a new, compact air conditioning unit to the market in May. Most large residential conditioners have been water-cooled in the past.

The conference was conducted to brief Sidles dealers on the company's advertising, merchandising, and promotion plans for the coming year. It was attended by 55 Sidles dealers from Nebraska and Iowa, and by several officials of Chrysler Airtemp. Sidles is the Chrysler distributor for this territory.

Michigan RSES To Meet In Lansing Apr. 17-19

LANSING, Mich.—Annual convention of the Michigan State RSES association will be held at the Olds hotel here April 17 to 19, with eight educational talks covering various phases of the industry on the program.

The convention opens Friday evening, April 17 with the showing of films and a get-together buffet.

Five talks are scheduled for Saturday. R. L. Williams of Kinetic Chemicals will open with a discussion of "Freon-13—Its Properties and Applications."

"Estimating and Installing Air Conditioning in a Residence" will be described by Lee A. Miles of Mueller Furnace Co.; "Design and Application of Evaporator Coils," Wm. J. Donovan, Bush Mfg. Co.; "Centrifugal Compressors" by Joseph Appelt of the Trane Co., and "How To Make Your Business Pay," by Bud Rutter of Capitol Business Service.

The Sunday morning talks will include a discussion of heat pumps by Al Newton, Acme Industries; "Advantages of B-9 Code State-wide" by James Barrett of the Michigan Safety Council, and "Health and Safety Are Our Business," by R. D. Hollingsworth.

Annual banquet to be followed by entertainment is scheduled for Saturday evening, April 18.

Plan To Air Condition Hotel

MIAMI BEACH, Fla.—Plans are being made to add air conditioning at the 72-room Drake hotel here.

First Annual RTA Meeting Held In Washington, D.C.

WASHINGTON, D. C.—First annual convention of the Refrigeration Trade Association of America at the Willard hotel here March 20 to 22 drew a limited number of member servicemen, contractors, and government employees in addition to some representatives of manufacturers who looked in chiefly out of curiosity.

Five firms took space in the exhibit hall. These included two parts wholesalers — Crown Refrigeration Supply Co. of Baltimore, Md., and Melchior, Armstrong, Dessau Co., plus three manufacturers—Berna Corp., Sealed Unit Parts Co., Inc., and Bar-Ray Products, Inc.

The convention opening Friday afternoon with an association business meeting, which was continued with an evening session. Educational meetings were held Saturday morning and afternoon, and Sunday morning. Attendance at these various sessions ran between 25 and 40.

In addition to the regular three-day convention, the association sponsored an "all-industry conference" on residential air conditioning Monday morning, March 23. There were 17 present.

Entertainment features of the convention included a buffet supper Friday evening, a dinner-dance Saturday with the guest speaker being William T. Smith of the U. S. Air Force Directorate of Installations, and a luncheon Sunday addressed by Frank Hudik, president of Comfort-air Co., Hackensack, N. J., who discussed residential air conditioning.

At the educational meetings the group heard Ernest H. Day, patent attorney, discuss "Patentable Ideas"; Warren E. Cox of Federal Housing Administration, on "Eligibility of FHA Financing for Residential Air Conditioning"; Francis P. Kerr of Small Defense Plants Administration, "Aims and Objectives of Government Specifications"; Paul E. James of U. S. Department of Agriculture, "Moisture Removal from Refrigeration Systems," and Tom S. Pendergast of Tecumseh Products Co. discuss the "Future of Residential Air Conditioning."

All officers of the association were reelected. C. W. Phillips is president; Richard H. Packett, first vice president; William T. Clark, second vice president; Ray L. Dillards, secretary; E. W. Gasser, treasurer, and Max Boulin, sergeant-at-arms.

Directors are M. G. Horwitz, L. L. Carter, J. Manley, A. C. Huber, S. Pollock, Geo. V. K. Greene, F. Terman, J. B. Broughton, and N. F. Crater. C. B. Collins continues as general counsel.



J. STRAFELLA A. D. SULLIVAN

Sullivan, Strafella Take New Posts with Brunner

UTICA, N. Y.—Announcement of the election of A. D. Sullivan as vice president in charge of engineering at Brunner Mfg. Co. here was made recently by A. G. Zumbun, president. Later, E. H. Shiller, vice president in charge of purchasing at Brunner, announced the advancement of Joseph Strafella from assistant purchasing agent to purchasing agent.

Sullivan came to Brunner in 1945 as assistant chief engineer, and was appointed chief engineer in 1947. He was with Frigidaire and Carrier.

He is a graduate of the Refrigeration Engineering Institute, and also has a B.M.E. degree from Cornell. Sullivan is active in the Upstate New York Chapter of the A.S.R.E., holding the office of secretary.

Strafella has been associated with Brunner continuously for the past 15 years, except during World War II when he served with the Marines.

After graduating in 1932 from New Hartford high school, Strafella then attended the Babson Institute in Wellesley Hills, Mass., from which he graduated in 1936. He then became connected with the W. T. Grant merchandising department in New Bedford, Mass. Later he joined the Airflo Corp. of Boston.

Finish 3-Level Plant In Hudson for Nor-Lake

HUDSON, Wis.—Completion of a new, three-level manufacturing plant here has been announced by Nor-Lake, Inc., manufacturer of commercial refrigeration equipment.

The plant, located at 2nd Ave. and Elm St. in Hudson, contains 15,000 sq. ft. of production space, office, and bookkeeping facilities, and is provided with loading docks at all three levels.

The firm, organized in 1947, produces dry bottle coolers, ice cube makers, freezers, bottle dispensers, and basement beer taps.

WANTED!

REFRIGERATION OR AIR CONDITIONING ASSEMBLY WORK

A Southeastern Manufacturer of Refrigeration Equipment is interested in obtaining contract assembly work to offset seasonal aspect of present product. Our plant has approximately 25,000 sq. ft. of floor space available for this purpose with private railroad siding and personnel skilled in assembling of refrigeration equipment. Our attractive labor rates and location in center of geographical trading area can mean a substantial saving both in assembly costs and in distribution. Our company is adequately financed. Write and tell us how we can help you. Address Box 4272, Air Conditioning & Refrigeration News.



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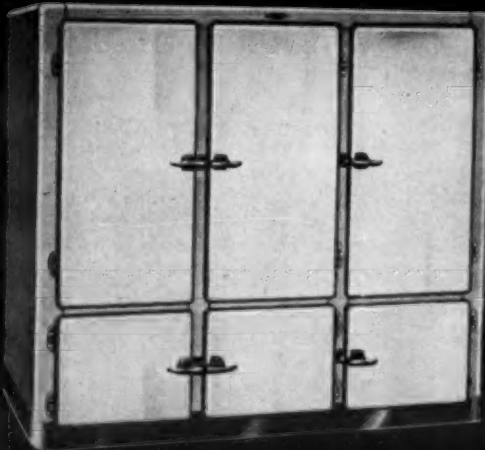
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Are Electric Utilities Ready for Residential Air Conditioning Boom?

(Concluded from Page 1)

"We will provide service for 2 to 5-hp. single-phase motors for air conditioning in any residential area in Detroit," George says.

What about those air-conditioning units equipped with motors designed for three-phase service?

3-PHASE CURRENT NOT USUALLY FOUND IN RESIDENTIAL AREAS

"Three-phase service is not generally available in residential areas," he explains. "However, we will provide three-phase service at our own cost in any case where the extension will not require an investment out of proportion to the revenue to be obtained."

Generally, most business districts in this area are already served by Detroit Edison with three-phase current. If the residence in question were located merely a block or two away from the nearest three-phase service, Edison would extend the fourth line required for three-phase service to the home.

For a moderate distance beyond that point, "where the cost of a three-phase extension is out of proportion to the revenue, the customer is asked to pay part of the cost of extension," George says.

Each case, however, would have to be worked out on an individual basis, Edison having no predetermined charge.

If this service had to be extended as much as a mile for a single residential consumer, the cost to both Edison and the consumer would be "prohibitive," he adds.

It might be well to point out here the question of single-phase vs. three-phase for residential air conditioning, though perhaps not a universal problem, is definitely one of practical consideration.

Most manufacturers of self-contained units that can be, and are, employed for residential cooling applications make them available with either single-phase or three-phase motors in the 2 to 5-hp. category.

But the units equipped with single-phase motors are sold at a price which runs from 7% to 12% more than the conditioners with three-

phase motors. This varies with the size.

In the 2 to 5-hp. range, at least, single-phase motors cost more because, for example, they need brushes and a commutator (not required on three-phase motors) and have a wound rotor in contrast to the less expensive three-phase rotor which is made up of iron plates, as a rule. Design of the latter, in fact, is similar in principle to the rotor of the single-phase fractional horsepower motor used in household refrigerators, freezers, window units, etc.

OPERATING COST DOES NOT DIFFER PERCEPTIBLY

As for the cost of operating a single-phase motor compared with a three-phase motor, there is no perceptible difference in this size range (2 to 5-hp.) in air conditioning service, according to Detroit Edison officials.

In this connection, it should be pointed out that Detroit Edison does set up a requirement of \$10 per month minimum charge for current if a residence is provided with three-phase service. All the electric power used in the house, however, goes through one meter, whether the current is single or three-phase, and is credited toward that minimum charge.

It is likely, then, that any consumer in the Detroit area who is considering air conditioning his home with a three-phase unit probably already has an electric range, clothes drier, refrigerator, freezer, and numerous other appliances so that his monthly power bill is nearly \$10 or more at present without air conditioning.

(Because Detroit Edison bills residential customers every two months, the minimum bill required with three phase would be \$20.)

Maintenance costs, it should also be remembered, may run higher on a single-phase motor, chiefly because of the wear that is common to all motors employing brushes and a commutator.

Single-phase motors also draw considerably more current on starting

than does a three-phase motor. Thus larger wire sizes may be required for a single-phase installation.

It would appear from all the above, however, that the Detroit home owner who wants year-round air conditioning today or in the foreseeable future would probably buy a unit with a single-phase motor, unless he had assurance that three-phase service would not involve expense to him.

There is considerable question in the minds of some Detroit Edison officials at least, whether there will ever be a vast number of complete year-round systems installed hereabouts.

400 DETROIT HOMES

HAVE COMPLETE SYSTEMS

Up to now, residential air conditioning has hardly scratched the surface represented by the utility's 530,000 domestic customers in the immediate Detroit metropolitan area.

Although no completely accurate records are available, it is believed there are approximately 400 completed air conditioned homes in the Detroit area. Of these, 141 are "Kelvin Homes" which were built by Nash-Kelvinator Corp. from 1936 to 1938.

Several systems have been installed since the war, and there are indications that at least one sizeable new building project, 90 homes, is slated to be completely air conditioned this spring.

OK Air Conditioning of Dallas Detention Home Air Conditioning Set for 17-Story Greensboro Bldg.

DALLAS—At a cost of approximately \$15,000, Dallas county's juvenile detention home will be air conditioned within the next few weeks, according to a spokesman for the Commissioners Court.

Air cooling units will be attached to the ventilating ducts already in the home.

County Judge Lew Sterrett said the commissioners were asking the design engineers who originally worked on the juvenile project to supervise the installation.

Proponents have pointed out that the home, part of the county's \$600,000 juvenile center on Harry Hines Blvd., was designed for air conditioning and that air conditioning ducts and other equipment, save the machines themselves, were built into the home. The air conditioning units were cut from the final home plans at the last minute as an economy measure.

3 'Precipitron' Franchises Awarded by Westinghouse

HYDE PARK, Mass.—Franchises to sell the Westinghouse "Home Precipitron," the electronic air cleaner, have been awarded to the following firms:

Kriechbaum & Dewein, Burlington, Iowa; Alton Plumbing & Heating Corp., Mineola, N. Y.; and Alhart Electric Co., Inc., Rochester, N. Y. The announcement was made by W. B. Cott, sales manager of the Westinghouse Air Conditioning Div.

GREENSBORO, N. C.—Plans for an \$800,000 air conditioning and renovation project for the Jefferson Standard Life Insurance building were announced recently.

According to Otto R. Brockman, assistant vice president and coordinator for the insurance company, the air conditioning part of the job was awarded to W. H. Sullivan Co. of Greensboro.

"In the course of the improvements," Brockman stated, "the entire electrical circuits throughout the 17-story building will be modernized and all radiators will be replaced by convectors. Hot and cold water will be used in circulating either warming or cooling air, which will be renewed from four to eight times hourly."

The installation will begin May 1 and is expected to be completed by the time heat is needed this fall.

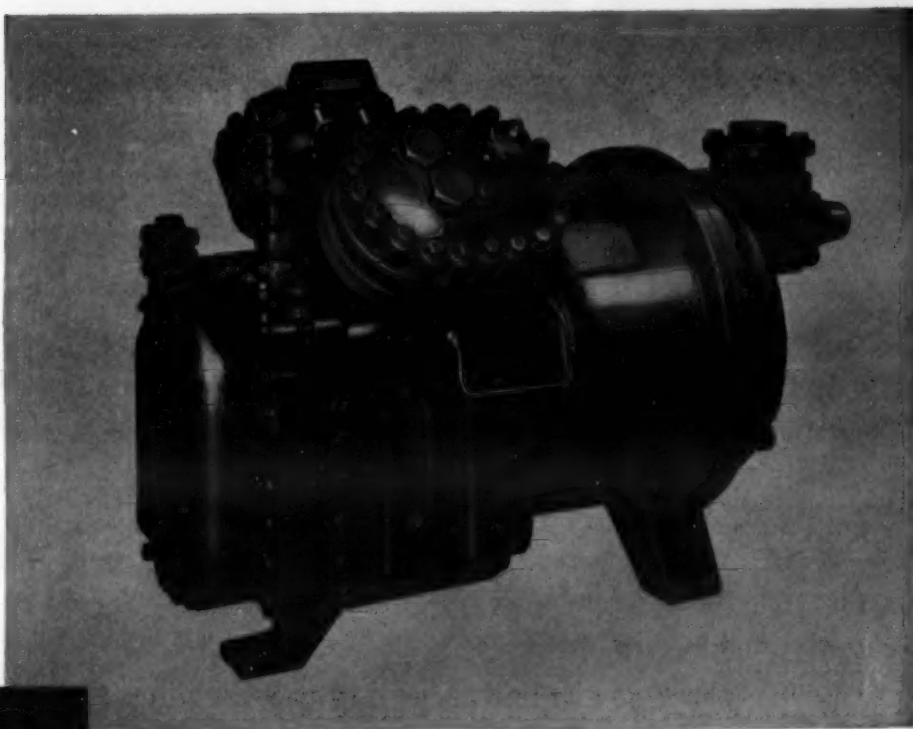
Part of the city's tallest building already is air conditioned—the first floor and the mezzanine occupied by Security National Bank. The current contract will complete the system.

"Centrifugal refrigerating units to be installed for the improvement will have a capacity of 607 tons," Brockman stated. "Equipment will be housed in a two-story brick and steel structure at the rear of the building."

JUST ASK US!

Turn to "What's New" Page for useful information on new products.

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- You will profit as a franchised Westinghouse Distributor. A few territories are still open. Contact Westinghouse Electric Corporation, Air Conditioning Division, Hyde Park 36, Mass.

Westinghouse adds a new unit to the most complete hermetically-sealed compressor line in the industry. The new CLS-2100 is the lightest, most compact, and efficient machine per horsepower that is available today. The Westinghouse hermetically-sealed compressor line runs from two to 100 horsepower, and is backed by years of research and practical application. Westinghouse gives its air conditioning equipment a full program of advertising and promotion support.

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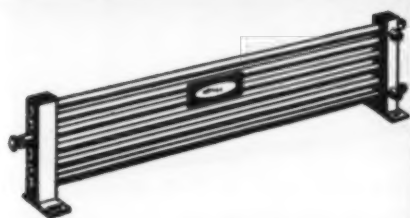
Cast aluminum liquid coolers for water, soda, beer. Separate refrigerant and liquid lines cast within an aluminum block eliminate freeze-up damage... insure sanitary, trouble-free operation.

Subcool liquid refrigerant... increase system capacity with Heat-X heat exchangers. High efficiency inner fins on suction line, provide maximum heat transfer, minimum pressure drop. Available in sizes 1/4 to 100 tons.



Condensers of the remote air and water type... complete with fan, motor, and tube-within-a-tube — water cooled with inner fins. A compact unit with cleanable water tubes.

Write today for free bulletins



THE HEAT-X-CHANGER CO., Inc.

BREWSTER - NEW YORK

DEALERS Attention!

Here's
Extra
Profits
For You!



LERN Self-Contained Refrigerated Display Case

- FACTORY GUARANTEED
- NATIONALLY ADVERTISED
- ATTRACTIVELY PRICED
- YEAR 'ROUND PROFIT-MAKER FOR YOU.

Dealers! There's a sensational market for the LERN Refrigerated COUNTER MODEL Display Case in the Restaurant, Hotel, Institutions and the entire Food and Drug field. It is the ideal addition to your line. Increases the profits of users and pays for itself in a very short time. Repeat sales come easy.

SOME EXCLUSIVE DISTRIBUTOR TERRITORIES AVAILABLE

LERN, Inc. 826 Milwaukee Ave. Chicago 22, Illinois

Serial Numbers--

(Concluded from Page 1, Column 4) that the Assembly had rejected the bill and it recommitted the measure.

Passage of the bill was recommended by the Joint Legislative Committee on Unfair Trade Practices.

The committee said it had been "bombarded with innumerable complaints by purchasers of television sets, washing machines, dishwashers, and various other appliances."

These consumers complained, according to the committee, that although they received warranties when they bought appliances, manufacturers refused to service the units or replace defective parts because of the provision in the warranties that they did not apply if the serial had been removed, altered, or defaced.

Said the committee: "Literally thousands of appliances from which the serial number has been removed are being brought into the appliance market in New York State and sold to the consuming public under fraudulent and deceptive guise that they are new products which carry the backing and guarantee of the company that manufactured them."

Opponents of the bill argued that it was not designed to protect consumers, as claimed, but certain manufacturers and exclusive agencies. They also asserted that serial numbers on some manufacturers' TV sets are printed on paper which is attached only with glue.

Proponents of the measure noted that most major appliance manufacturers put their serial numbers on metal plates which are firmly attached to the units and that television manufacturers do likewise.

Miller Buys Bonney--

(Concluded from Page 1, Column 2) service tool manufacturer since the early days of automotive development. It started making service tools for dealers of Dodge Bros. in 1914 and has continuously designed and produced special service tools for dealers in the Chrysler group ever since. Miller also supplies the same service to Kaiser-Frazer and Willys dealers.

Bonney has manufactured an extensive line of hand tools for 52 years. The line, which is distributed internationally, is for use by refrigeration, automotive, aviation, industrial, marine, and farm mechanics.

Miller's other wholly-owned subsidiaries are:

Monroe Steel Castings Co., Monroe, Mich., large producer of steel and alloy castings for the automotive, agricultural, earth-moving, and other industries; Precision Mfg. Co., West Branch, Mich., engaged in special machining and manufacturing; and Buckeye Forging Co., Cleveland, producer of standard and special forgings for the automotive, farm equipment, water heater, mechanical handling, and allied industries.

Under Miller ownership, Bonney management will be directed by Joseph W. McDougal, president. Arthur J. Male, former president, will be chairman of the board of directors. Fred S. Durham, Jr., a grandson of the founder, will continue as vice president and secretary.

Metals Under DMS--

(Concluded from Page 1, Column 2) applications for controlled materials and may immediately order, without ratings, their steel, copper, and aluminum materials for third quarter delivery.

In addition, preferential status is removed from civilian orders already accepted for delivery in the third and subsequent quarters.

Under the two DMS regulations initially announced (covering production and construction), the Defense Department and the Atomic Energy Commission will provide NPA with a statement of the quantities of steel, copper, and aluminum they need each quarter to carry on their programs.

NPA will tell producers of these metals what their share of the defense requirement will be. The producers will then reserve a portion of their total production to fill these requirements in accordance with NPA directives.

Manufacturers of Class A products for military and atomic energy programs will receive authorized production schedules, allotment authority to purchase controlled materials, and preference rating authority for other materials. This will be done on the basis of information furnished by them on Form DMS-4A.

When Class B product manufacturers receive rated orders from customers engaged in the A through E programs, they will use a self-authorizing B-5 symbol to identify their purchases of controlled materials and other production materials.



W. J. STELPFLUG



A. P. VIRAGH



A. B. BIDDLE



J. R. CAULK, JR.

Hussmann Appts.--

(Concluded from Page 1, Column 3) the parent company, was elected president of the sales subsidiary, succeeding McMillan. Stelpflug continues as vice president and member of the board of the parent company.

A. B. Biddle, regional accounts division sales manager, was elected vice president of the sales subsidiary. He continues as head of the regional accounts division.

A. P. Viragh, national accounts division manager, was elected vice president of the sales subsidiary, and continues to head that division.

The board of directors of Hussmann Refrigerator elected J. R. Caulk, Jr., assistant to McMillan, to a vice presidency.

Biddle started with the Ligonier Div. of the company in 1925. His early experience was in accounting from which he branched into sales work including operation of distributorship and branch. Later he was divisional manager in the field and rose to manager of the regional accounts division.

Viragh started with the company in 1936 as a special sales representative. He advanced to divisional manager, sales manager, and then to head of the national accounts division. He has done much work in the development of self-service selling of perishables, and the refrigeration equipment for that purpose.

Caulk, who started with the company in 1937, has served in sales, engineering, and administrative capacities. He will continue to function in similar capacities and will take on new responsibilities.

All incumbent officers of Hussmann Refrigerator were re-elected: McMillan, chairman of the board and president; W. J. Stelpflug, vice president; W. H. Grant, vice president; D. E. Rutishauser, vice president; H. A. Giovanni, secretary and treasurer; V. B. Winkler, assistant secretary and treasurer. The latter two also serve, respectively, as secretary-treasurer and assistant secretary and treasurer of Hussmann Refrigeration.

Get it! HARRY ALTER'S SPRING and SUMMER... No. 158 DEPENDABOOK

Illustrates, Describes, Prices Over 9,000 REFRIGERATION, Television, Radio, Heating, Electric Motor, Air Conditioning PARTS and Supplies

Yes, get it and save money!

Write Now to

The HARRY ALTER CO. Inc.

1728 South Michigan Avenue, Chicago 16, Illinois
134 Lafayette Street, New York 13, New York

HARRY ALTER gives you snappy service!

WHOLESALE ONLY

JE

SOLENOID VALVES

Insure Quiet, Dependable
Air-Conditioning in
San Antonio's
Famous Menger Hotel

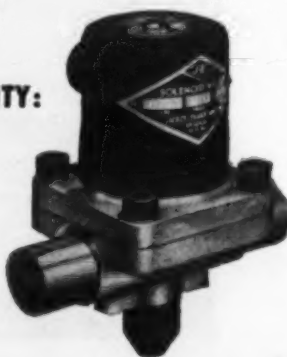
A Texas tradition since 1859, the Menger Hotel in San Antonio is unique in its combined historical atmosphere and modern resort hotel appointments. Located next to the Alamo, the Menger features comfortable guest rooms, magnificent dining facilities, and a beautiful new swimming pool in one of its two luxurious patios.

Air-conditioning was installed in 112 rooms of this famous hotel by Decker and Roberts, contracting engineers, of Fort Worth, Texas.

Because of their superior performance, JE Solenoid Valves were chosen to provide personalized temperature control of these guest rooms. In true Menger tradition, it's "nothing but the best for the best."

ALL JE SOLENOID VALVES HAVE THESE 5 MAJOR FEATURES OF DEPENDABILITY:

- Tight Seating — no bubble tolerance.
- Simplicity — only two moving parts.
- Long Life — cool coils.
- Durability — all corrosion-resistant material.
- Opening Pressure Differential — higher than most others on the market.



UNCONDITIONALLY GUARANTEED
FOR 18 MONTHS

See your local refrigeration wholesaler, or write us today for details

JACKES-EVANS MANUFACTURING COMPANY
Controls Division, 4427 Geraldine Ave. • St. Louis 15, Missouri

3 decades did it!

Gem Refrigerator Company's 30 years' experience pays off for you in superbly built refrigerators at competitive prices. The entire line is sensational—every size for every need, amazingly low priced.

IT'S A GEM!

for Bakers

DEALERS! Don't miss out on the most attractive deal ever to come your way. Rich, new territories open, fully protected. Write now!



model 5015
WALL DISPLAY
REFRIGERATOR

GEM

REFRIGERATOR CO.

165 W. Wyoming Ave., Phila. 40, Pa.

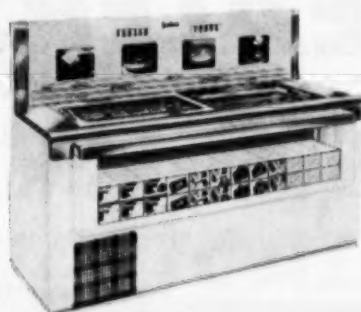
THE JORDON LINE BIGGER 'N' BETTER THAN EVER

Never before a line like this! The new Jordan line is exciting news in the industry because here, for the first time, from one manufacturer... are all the products—all the features—all the most wanted improvements to help you sell every Jordan product on sight! This is your bigger and better profit line for '53... engineered, designed and built as deliberate masterpieces by the men of Jordan—world pioneers in refrigeration engineering!

NEW!

Model P-19

Frozen Food and Ice Cream Merchandiser, featuring new, PANORAMIC Glass Display Front. Length, 76". Height, 36" (less superstructure). Depth, 32½". Capacity, 17 cu. ft.

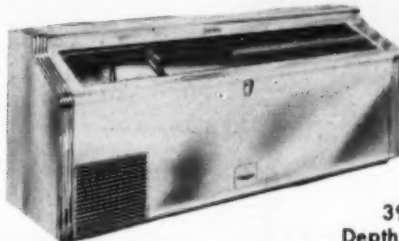


Model M-17

Frozen Food and Ice Cream Merchandiser. Length, 76". Height, 36" (less superstructure). Depth, 28½". Capacity, 17 cu. ft. (Also available: M-26—26 cu. ft. capacity.)

Model D-54-M

Glass-Front, Self-Service Dairy Case. Length, 54½". Height, 61". Depth, 30". Total capacity, 17 cu. ft.—over 12 cu. ft. refrigerated.



NEW!

Model 40

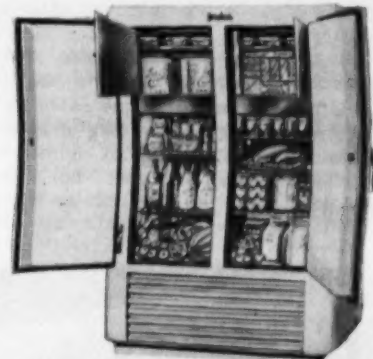
Dry Beverage Cooler and All-Purpose Refrigerator. Height, 39". Length, 8' 1". Depth, 29". (Also available: Model 63—6' 3" length.)



NEW!

Model 4½

4½-ft. Sliding Door Wall Case. Available with solid or Thermopane Glass doors—stainless steel or enamel finish. Height, 71¼". Width, 53". Depth, 30".



Model 14/6

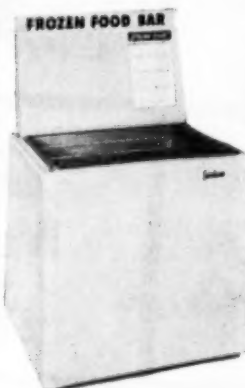
Two-temperature Refrigerator. Height, 71¼". Length, 43½". Depth, 33". Capacity—14 cu. ft. refrigerated, 6 cu. ft. freezer.



THE GLAMOROUS, GOLD-TONE UPRIGHT FREEZER

Model J-22—holds over 700 lbs. food.
Model J-16—holds over 525 lbs. food.

The glamorous, new Jordan Uprights are designed to take the freezer out of the basement and into the kitchen! Outside—sparkling white enamel, accented with gleaming Gold-Tone... the interior trimmed in smart, contrasting Arctic Blue. Plus 16 new, improved features, including: exclusive "Stow-Away" dry storage bin, exclusive "Jordan Juice Shelf," and exclusive "Seal-O-Matic" door!



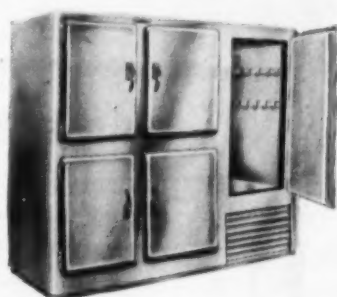
NEW!

Model OT-9

"Quickie" Merchandiser. Height 34" (open, 58"). Width, 33". Depth, 28". Capacity, 7.8 cu. ft.

Model 60H

Reach-in Refrigerator. Height 71". Width, 84½". Depth with hardware 33". Capacity, 60 cu. ft. (Also available in 23, 30 and 40 cu. ft. sizes.)



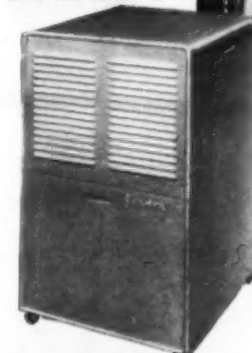
NEW!

Model CF-30

Upright Food Freezer. The ideal freezer for restaurants, institutions, or any place where large capacity and economy are required.

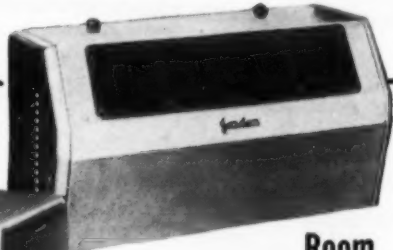


NEW!



Model DE-11

Dehumidifier. Portable! On ball-bearing casters... rolls from room to room. Withdraws 11 qts. moisture in 24 hrs. from 8,000 cu. ft. area. Height, 26½". Width, 15". Depth, 16". Finished in Gray Hammer-tone enamel.



Room Air Conditioner

New in design! New in practical efficiency! Built to rigid Jordan standards to provide more cooling power for less money. ¾ H.P. Extends only 11½" into room. Fits nearly every standard window. Cabinet finished in Gray Hammer-tone enamel.

HERE'S WHY JORDON BOOSTS YOUR PROFITS!

1 ADVERTISING!

Powerful and continuous national advertising series, beamed at your customers. Plus cooperative program, promotional helps!

2 FINANCING!

Complete, ready-made plan, designed to speed your sales—and under the best terms!

See JORDON at the frozen food exposition Booth 10, Grand Central Palace, N. Y., April 20-23

3 BIGGER MARK-UPS!

Bigger values! Big demand for all Jordan products!

4 PERFORMANCE!

Jordan sets a new high standard for reliable, efficient, economical performance! Years ahead with advanced features your customers want!

JORDON REFRIGERATOR COMPANY

58th & Grays Ave., Phila. 43, Pa.

IF IT'S JORDON, IT'S RELIABLE REFRIGERATION!



specialty SELLING METHODS

Free Canned Goods Offer Sells Appliances In Idaho

IDAHO FALLS, Ida. — The ten Gamble's Western Auto Supply Co. stores in Idaho offered consumers a chance to cut their cost of living and also purchase appliances of their choice in a canned goods promotion.

Appliances in the stores were offered at special prices with assorted canned goods thrown in free with the deal. As an example, an 8-cu. ft. "Coronado" refrigerator was offered at \$224.95, with a \$50 allowance for any refrigerator as a trade-in, plus 200 cans of assorted foods.

The offer enabled customers to make down-payments out of their food budgets. The promotion resulted in "better than average" new business.

Omaha Sales Survey Shows '53 Appliance Sales Start Better Than '52

OMAHA, Neb.—An electric appliance sales survey conducted by the Omaha Public Power District showed sales reported by 94 dealers in the Omaha area were up in January, 1953, over the same month the year before. Biggest gains were reported in automatic washers and dryers.

Total number of automatic washers sold by the 94 dealers in January was 337 as compared with 225 in January, 1952. The month's total this year was only 20 below the number of conventional washers (357) sold during the month. Number of dryers sold was 215 as compared with 115 in January a year ago.

Ranges were the only major appliance to show a drop this year, according to Public Power Co. officials. Sales declined from 260 in January, 1952, to 248 this year.

Other major appliance sales as reported: Refrigerators, 430, or 96 more than in January, 1952; home food freezers, 164, up 39; hot water heaters, 124, up 35; radios, 631, up 282; television sets, 1,673, up 348.

How Is An Appliance Like A Boy Scout?—Read On

ALTOONA, Pa.—J. E. Heaps Electric Co. here tied in effectively with observance of Boy Scout Week with a newspaper advertisement captioned: "The Third Scout Law—A Scout Is Helpful."

Copy read: "He must be ready at all times to render service to his community and he must do at least one good turn a day. We here at J. E. Heaps strive to make use of this Scout Law constantly. The famous appliances we sell are helpful to you in every way."

"They lighten all your burdens in housework and are truly 'scout-worthy' in helpfulness."

'Dollar-Day' Promotion Scores at Schwegler's

BUFFALO—A "Dollar Day" promotion in which customers were given a choice of major appliances for \$1 with each purchase of a range at the regular price of \$229.95, paid off for Schwegler Bros. here.

Initial response was described by a store spokesman as "very good," with traffic continuing steadily throughout the day.

The majority of shoppers were reported selecting a 5-piece chrome breakfast set as the combination item purchased for a dollar.

Also offered in the deal were a family-size washer, a canister-type vacuum cleaner, or an automatic hot water heater. All dollar items were nationally advertised merchandise.

Schwegler Bros. launched the promotion with a half-page newspaper advertisement which played up the Dollar Day angle in bold type. The event was limited to two days—Monday and Tuesday—and the store declined mail and phone orders, anxious to get people on the selling floor.

Lincoln, Neb. Department Store Moves Used Appliances to Another Building

LINCOLN, Neb.—Gold & Co. department store has leased the 50-ft. frontage at 1030 "M" St., adjoining the firm's used appliance and furniture exchange, also with a 50-ft. frontage at 1018 "M" St., and will move its used appliance and service operations to the new space.

The old location will be retained for used furniture and similar home furnishings exclusively.

Gold & Co. houses its new appliance operation on the third floor of the department store, which occupies three fourths of a square block between "N" and "O" and 10th and 11th Sts. Les Strain is manager of the department.

The used appliance store is managed by Walt Crouch. The new location will give this operation sufficient space for adding some lower-priced new lines such as apartment-size ranges, small refrigerators, etc.

It will also give the department window display space for the first time, as well as a greatly expanded

service department. Back end of the new location will be used for storage.

The 1030 "M" St. location was formerly occupied by Hester Industries, distributor of Frigidaire commercial equipment. This firm, headed by E. N. Hester, has built his own plant at 14th and Cornhusker, just beyond the Lincoln city limits. He plans to add household appliances in addition to his refrigeration and air conditioning sales and service.

Chattanooga Gets New Home Appliance Firm

CHATTANOOGA, Tenn.—Hannah-Adams, Inc., newly-formed home appliance firm, has leased space in the building at 3629 Brainerd Rd.

The firm will handle Fedders room air conditioners, home appliances, and RCA and Motorola television receivers. Ample off-street parking space is provided for customers, according to Hugh Hannah and Harry D. Adams, co-owners of the firm.

SERVEL DRIVE

DEALERS' TIE-IN TABLE

FOR \$6,000,000 AD DRIVE

Here's How You Cash-In Big and Fast!

Launching Date

Date For Dealer Follow-up

IN MAGAZINES!

Powerful full color ads in Saturday Evening Post, Better Homes & Gardens, Family Circle, Woman's Day, Time, Successful Farming, Sunset, McCall's, Colliers, and LIFE, send customers to your store!

LIFE spread kicks off drive on

MARCH 30th

Be sure displays are up... demonstration model in action now...

MARCH 30th

IN RADIO AND TV!

Millions of sales messages blanket the nation! 1 week build-up, followed by heavy sales drive throughout entire refrigerator season! Tie in with your own spots!

Saturation Radio-TV campaign starts

MARCH 30th

See distributor about running your own spots today...

MARCH 30th

IN NEWSPAPERS!

Big Sunday "Ice-Maker" ads to run during the heart of your selling season in over 100 key market areas, coast-to-coast!

Powerful Sunday ads in over 100 markets starting

APRIL 5th

Check distributor about tying in at once...

MARCH 30th

IN BILLBOARDS!

Across the nation! Ask your distributor about how you can tie in with your own billboards! Makes your store Headquarters for the Ice-Maker in your area!

Tremendous outdoor campaign starts

MAY 15th

To tie in, see your Distributor today...

MARCH 30th

1953 "BLUE BOOK"
The Nationally Recognized ILLUSTRATED Book of Refrigerator Trade-in Values
One trade-in based on this BLUE BOOK will more than pay for the book!
order your copy today

\$5.00 each
IN QUANTITIES 25 OR MORE \$3.50
NATIONAL REFRIGERATOR MARKET REPORT, INC.
DEPT. AC-1 BOX 606
LOS ANGELES 25, CALIFORNIA

PeeKay... the Plastic-Kote "Spray" says:
Cut down retouching and refinishing costs with **Plasti-Kote SELF-SPRAY FINISHES**

Paint and Pressure in one container. Ideal for touch-up and re-finishings.
PLASTI-KOTE, INC.
425 Lakeside N.W. Cleveland 13, Ohio



The name to watch for great advances in
REFRIGERATION and AIR CONDITIONING
GAS or ELECTRIC

Servel

Servel Inc., Evansville 20, Indiana • In Canada, Servel (Canada) Ltd., 548 King St. W., Toronto, Ontario

Harlow Heads Louisville Appliance Distributor Group

LOUISVILLE, Ky.—Harry S. Harlow, sales manager of Stratton & Terstegge Co.'s Major Appliance Div., was recently elected president of the Louisville Wholesale Appliance Distributors Association.

Harlow, who was vice president of the association last year, succeeds Walter Riley, assistant general manager of Otis-Hidden Co.

Other association officers are Robert V. Goodlin, vice president, and V. J. Bloemer, secretary-treasurer. Goodlin, the association's secretary-treasurer last year, manages the Louisville branch of Arthur Fulmer of Kentucky. Bloemer is sales manager of the Falls City Supply Co.

Quarters Remodeled by Distributor in Buffalo

BUFFALO—W. Bergman Co., appliance distributor, has remodeled its offices and warehouse at Oak and Eagle.

Ebco Mfg. Takes over Sales, Advertising of Kelvinator Air Drier

COLUMBUS, Ohio—W. G. Kronauge, manager of special products for Kelvinator, has announced that Ebco Mfg. Co., Columbus, has taken over sales and advertising responsibilities for the Kelvinator air drier, it was reported here.

According to A. R. Benua, Ebco president, this new arrangement is the same as the one which has been in effect on Kelvinator water coolers.

Ebco field representatives have already conducted sales meetings on both water coolers and air driers for Kelvinator zones and distributors in Chicago, St. Louis, Kansas City, Cleveland, Detroit, Cincinnati, Pittsburgh, Philadelphia, and Washington. Meetings have been scheduled for New York, Boston, Buffalo, and Minneapolis.

Kelvinator air driers will be advertised for the first time nationally in consumer magazines. All advertising and promotion feature the new "Dampness Doctor" theme.

Ebco sales supervisors for water coolers and air driers in the Kelvinator zones include L. C. Love, R. H. Orthoefer, T. W. Giller, A. E. Bezer, and H. W. Kirk.

Downtown Tampa Stores Stay Open Monday Nights

TAMPA, Fla.—Several stores in the downtown area, including Maas Bros., Sears, Penney's, and a number of chain specialty shops, have started to remain open Monday evenings.

Maas Bros., a department store, recently advertised that it would be open from 9:30 a.m. to 9 p.m. on Mondays and 9:30 a.m. to 5:30 p.m. Tuesdays through Saturdays. A Sears advertisement was headlined, "Monday night is family night."

Maas Bros. also announced its new five-day-week system for employees. "By narrowing our work schedules," the store said, "we can keep our stores open one night a week and yet give a full day off instead of the present half-day."

Sale Ads Must Mean Just What They Say In Mass.

BOSTON—The Massachusetts legislature has recently passed a bill to forbid retailers from advertising "going out of business" sales unless they are going out of business.

Now, when a retailer advertises sales under such headings as "Sell Out," "Must Vacate," "Liquidation," "Lost Our Lease," or similar terms, he must do as advertised after the final date of the sale, which must be prominently displayed.

He is also required to file with the city or town clerk a detailed inventory of merchandise to be included in the sale and will not be permitted to bring in new merchandise.

He must also file a bond and declare, under penalty of perjury, that the sale is for the purpose described. Then he will be barred from continuing business.

Passage of the new law was supported by the Boston Better Business Bureau, the Boston Retail Trade Board, and the Massachusetts Council of Retail Merchants.

Bill Aims To Plug Hole In Robinson-Patman Act

WASHINGTON, D. C.—A bill introduced recently by Sen. Estes Kefauver and cosponsored by 22 other senators would change the Robinson-Patman Act so that "good faith" would not be a complete defense in cases where price or other discriminations were of such magnitude as to result in probable injury to competition.

However, the bill provides that "good faith" would continue to be a complete defense in all cases where the effect of discrimination fell short of probable injury to competition.

"Good faith" would also be a full defense in cases where only an individual competitor, or individual competitors, as distinct from competition, were injured.

According to Sen. Kefauver, the bill would plug a major loophole in the Robinson-Patman Act. He said this loophole results from the ruling of the U. S. Supreme Court in the Standard Oil of Indiana case that good faith is a complete defense to a Sen. Kefauver pointed out that it is charge of discrimination.

up to enforcement agencies to prove that discrimination charged was not in good faith. He said this is practically impossible to do.

The bill was seen as a move to counter efforts to weaken federal anti-trust laws, particularly the Robinson-Patman Act.

New Wholesale Firm Buys Austin & Son of Denver

DENVER—Sale of Austin & Son, wholesale appliance company here, to the newly-formed Dahl-Conger firm was announced recently.

William (Bill) E. Austin, president of the Austin company and Denver appliance dealer for 27 years, said he will retire from active business because of illness. A pioneer in the wholesale appliance business in Colorado, Wyoming, and western Nebraska, Austin was responsible for the introduction of many brands in the area.

The Dahl-Conger firm is composed of Lou F. Dahl, former sales manager of Larson Distributing Co., and John F. Conger, former Austin & Son sales manager. The new firm will handle Servel, Arvin, and Detroit-Jewel brand appliances.

BREAKS TODAY!

Only SERVEL

Makes Ice Cubes Without Trays

...AUTOMATICALLY!



STARTS ITSELF!

REFILLS ITSELF!

STOPS ITSELF!

3 GREAT APPLIANCES IN 1 REFRIGERATOR! FREEZER! ICE-MAKER!

Self-defrosting refrigerator... 80-lb. freezer... and Servel's sensational new Automatic Ice-Maker... all designed into one miracle appliance! You get all the other important luxury features too!

Super-Cubes! Big, dry, super-cold IceCircles! Take 'em by the handful!

Continuous Supply! Take 'em out and Servel puts 'em back... automatically... night and day!

Won't Stick Together! Even during automatic defrosting! Always loose—always ready to use!

SERVEL HOME FREEZERS



New Food-Plan saves your customers 25%! Exclusive Cold-Seal construction gives top protection!

New Servel Food Plan!

Servel Electric Wonderbar

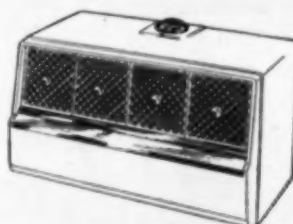


Portable, Silent Refrigerette Styled as Smart Furniture AC or DC, 12 to 230 volts.

Perfect Indoors or Out!

SERVEL ROOM AIR CONDITIONERS

Servel gives a ¼ h.p. model for a ½ h.p. price... a 1 h.p. model for a ¾ h.p. price. Exclusive 1-dial control!



50% More Cooling Power!

To make a "GOOD CONNECTION" Call RIVERSIDE!

This rubber-encased connector links a refrigerator relay with a Fusite hermetic terminal, which is welded to the compressor. Originally, the connector had a brittle plastic case which presented various problems. Our engineers suggested a molded rubber case, also redesigned the contacts. Resulting improvements: (1) Greater structural strength, (2) Elimination of damage in handling, (3) Faster assembly, (4) Better electrical contact, (5) Higher "pull-out" rating. And if you have problems involving the design or production of similar or more intricate assemblies, you too, can "make a good connection!" Just write or call us, without obligation, for engineering recommendations.

RIVERSIDE MANUFACTURING AND ELECTRICAL SUPPLY COMPANY

10233 Michigan Ave., Dearborn, Mich. Tiffney 6-6800
WIRING HARNESSES AND ASSEMBLIES • CORD SETS • HEATER AND EXTENSION CORDS • SWITCHES • MOLDED RUBBER PRODUCTS

FLO-COLD DRINKMASTER DOUBLE-DUTY BOTTLE COOLER

Mfd. by United Refrigerator Engrs. Menominee, Mich.
Write for free 8" x 10" photos

Curtis REFRIGERATION
AIR CONDITIONING
COMMERCIAL

Packaged Air Conditioning Units 2 to 15 Tons
Condensing Units 1/4 hp. to 40 hp.
Curtis Refrigerating Machine Division
of Curtis Manufacturing Company
1912 Kienlen Ave. St. Louis 20, Mo.
Established 1854

INSIDE DOPE

by GEORGE F. TAUBENECK

(Concluded from Page 1, Column 1)
be able to do so with a down payment of \$1,200 to \$1,800, instead of \$2,400 to \$3,000 as at present."

Pointing out that home building is one of the major bulwarks of the American economy, Spiegel notes that construction of new homes accounted directly for \$11,000,000,000 of the national production in 1952, plus an estimated \$2,750,000,000 indirectly in land and development activity and in home furnishings and household equipment which are a direct result of such sales.

In addition, the existing inventory of 43,000,000 non-farm homes represents a \$300,000,000,000 national asset—almost one-fourth of the estimated total wealth of the United States—which must be preserved and strengthened.

The NAHB executive offers these major recommendations for governmental action on a comprehensive national housing program:

1. Congress should give FHA sufficient insurance authorization to provide a continuous revolving fund, thus avoiding the periodic exhaustion of FHA insurance funds which from time to time has impeded home building.

2. The interest rate on guaranteed or insured home loans should be increased in direct relation to the interest rate on government bonds.

The present 4% rate on VA-guaranteed loans, and, in some areas, the 4½% FHA rate, are out of line with the rising rate of return on other investments. The present volume of VA financing has been made possible only through inordinately high discounts which lead to higher costs for the home buyer, direct Federal lending, and purchases by the Federal National Mortgage Association.

3. FHA down payment requirements should be reduced, particularly on medium-priced housing, and a 30-year mortgage should be permitted on all VA and FHA housing priced below \$12,000—instead of the 25-year limit now in force on most such mortgages.

Spiegel proposes raising the FHA mortgage limit from \$16,000 to \$20,000 on single-family homes and a new sliding scale of down payments under which the maximum mortgage would be 95% of the first \$8,000 valuation, plus 80% of the next \$7,000, and 60% of the next \$5,000. On homes valued above \$20,000 up to \$25,000, the maximum mortgage would be a flat 80%.

4. FNMA should be restored to its original function as a secondary market for mortgages, to assist in areas where mortgage credit is insufficient and to meet temporary shortages which may occur from time to time. Adjustment of FHA and VA interest rates would, in itself, go far toward reducing the use of FNMA as a primary mortgage market.

5. Defense and military housing programs should be extended except as further need is conclusively demonstrated. If continued, care should be taken to avoid over-estimation of defense and military housing needs.

6. The estimated \$6,000,000,000 now

spent each year for ordinary home repair and modernization could be increased by at least \$2,000,000,000 by an active campaign for enforcement of local building, sanitation, and health codes, rehabilitation and razing of housing which cannot be salvaged. FHA should expand and liberalize its insuring aids in this field to make this program effective.

7. For such families as are unable to pay an economic rent, rent assistance (financed by federal and state contributions in agreed proportion and properly supervised on a local basis) should be substituted for the present wasteful public housing program.

8. Useless portions of FHA should be eliminated. Sections 609, 611, Title VII, and the farm housing section of FHA are almost completely inactive and should be repealed as an economy measure.

9. The Housing and Home Finance Agency should be continued as a supervisory agency only. The necessity for a number of HHFA's present activities should be carefully reviewed.

10. The supervision of the technical aspects of VA-guaranteed home loans should be transferred to FHA, thereby eliminating useless duplication of effort which adds to government expenses, and will result in savings to veteran purchasers.

11. The public housing program, which involves federal appropriations of more than \$100,000,000 a year, should be reviewed carefully before any further funds are committed or appropriated. An immediate review also should be made of all existing construction contracts between the Federal Public Housing Administration and local housing authorities.



York Room Conditioners--

(Concluded from Page 1)

lowers the cooling capacity of the unit as the temperature drops so that the unit will not overcool.

As explained by John Roth, commercial sales manager for York's central district, modulation control is achieved through a thermostat that cuts in a little heater on the capillary tube just ahead of the evaporator. This heater causes some of the refrigerant to expand before it reaches the evaporator, thus reducing its capacity to pick up heat. When the lowered cooling requirements are satisfied, the thermostat automatically cuts off the heater.

4 MODELS PROVIDE HEATING

Four models (those marked with an R) can provide heating as well as cooling through a reverse cycle system built right into the unit.

Roth explained that this was accomplished by actually reversing the flow of the refrigerant through the system. On the cooling cycle, the refrigerant passes through the evaporator inside the room, through the suction line to the compressor, through the discharge line to the condenser outside the room, and then back to the evaporator.

For heating, the user merely turns a dial mounted on top of the unit 90°. This reverses the flow of the refrigerant by causing the refrigerant from the condenser outside the room to flow through the suction line into the compressor, from the compressor through the discharge line to the evaporator inside the room (now serving as the condenser) and then to the condenser outside the room (now serving as the evaporator).

COOLING TO HEATING CHANGE TAKES SECONDS

Roth explained that the change-over from cooling to heating is accomplished in a matter of seconds without additional load thrown across the line, without increase in consumption of electricity for heating, and without use of heating elements.

He said that a reverse cycle ¾ ton unit will give 8,400 B.t.u. of cooling and, when outside temperature is 60° and inside temperature is 70°, 9,300 B.t.u. of heating. He claimed that a York reverse cycle unit will adequately heat any room it can cool when outside temperatures drop as low as 30° F.

"When outside temperatures get down below 30°," he said, "you'd better turn on the central heating."

Landmesser explained that the model A50S was a special unit added to the line at the express request of a hotel manager whose establishment

was already equipped with York window units.

The hotel manager told him, according to Landmesser, "I don't know why people do it, but they will take the filter out of a window unit and pull it apart, leaving the shreds."

Landmesser said that the Model A50S in York's answer to this problem. The front and top of the unit is entirely closed—a solid metal panel. The air discharge outlet is located on the underneath side with the louvers arranged so that a person cannot even get his fingers through.

Another special feature introduced at the meeting was an adapter that permits installation of console units at casement windows. The adapter has a slot through its center for the casement center frame. The lower pane is cut to allow passage of the supply and discharge ducts.

ADVERTISING DESIGNED TO ANSWER PUBLIC'S OBJECTIONS

John Garceau, manager of advertising and sales promotion for York, explained that York's literature on the room units was designed to answer the biggest public objection to air conditioners and to capitalize on their biggest reason for buying.

He said that York's advertising agency made an extensive survey to find out why people bought room air conditioners and, conversely, why they didn't buy.

This survey determined that the most common reason for not buying was that air conditioners made them feel chilly. The most popular reason was that they felt better and more comfortable in an air-cooled room.

So York literature emphasizes the slogans "York cools without chilling," and "Feel better and look younger with York air conditioning."

TYPHOON Air Conditioning

ENGINEERED FOR EVERY NEED
PRICED FOR EVERY BUDGET

- Air Conditioning Units 1½-20 tons
- Multi-Packaged Systems Up to 60 tons
- Prop-R-Temp Heat Pumps 2-20 tons
- Evaporative Condensers
- Packaged Water Chillers

TYPHOON AIR CONDITIONING CO., Inc.
794 Union Street, Brooklyn 15, N. Y.

Your No.1 DEMAND... the CONDENSER must be

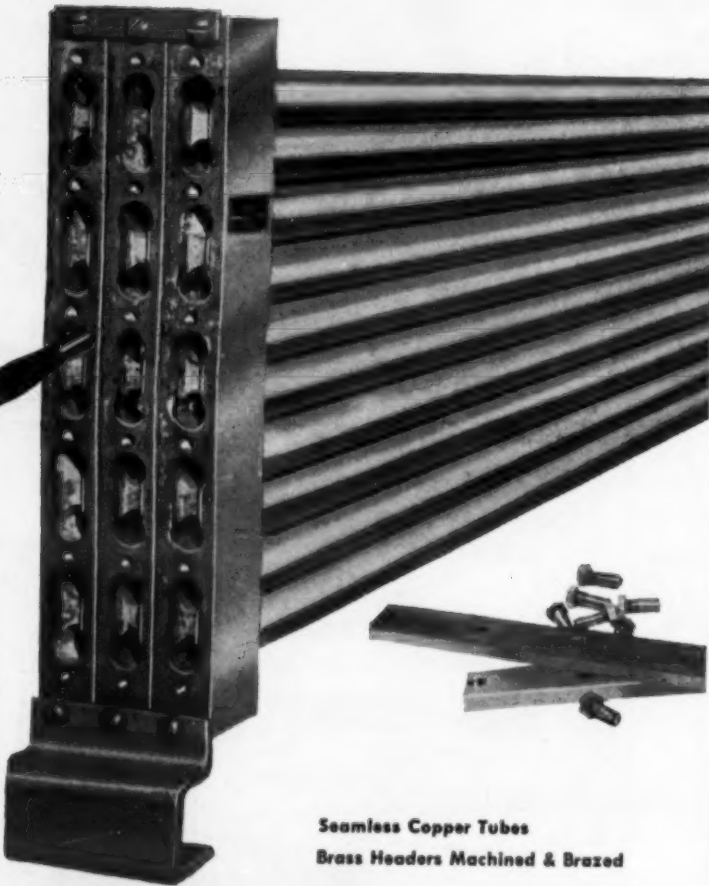
CLEANABLE

Because...

CLEANABILITY costs no more in the new HM condensers. Tremendous productive capacity has now made even the smallest models (½ H.P.) competitive with non-cleanable units.

CLEANABILITY is available now from many manufacturers who are equipping even their smallest assemblies with cleanable HM condensers in answer to industry demands.

CLEANABILITY prolongs the life of any unit—maintains new-unit efficiency indefinitely by removing corrosion accumulation. A spiral tool does the cleaning job.



Seamless Copper Tubes
Brass Headers Machined & Brazed

Why not insist that your next unit have a CLEANABLE water-cooled condenser?

Especially since leading manufacturers, one after the other, are recognizing the "must" advantages of accessibility to cleaning and are equipping their units accordingly.

They realize that initial purchase cost is no higher, and longer life and more economical performance are guaranteed. The CLEANABLE feature

enables you to recover new-unit efficiency and thus maintain 100% economical operation indefinitely.

In Halstead & Mitchell Cleanable Condensers, water tubes are accessible from both ends on all size models

½ through 25 ton—all water cooled, double tube, counter flow.



Halstead & Mitchell

Wholesalers in Principal Cities—Write for descriptive literature

OFFICES: BESSEMER BUILDING • PITTSBURGH 22, PA.

True

MODERN COOLERS FOR A MODERN AGE



Offers you
a quality line of

DRY BOTTLE BEVERAGE COOLERS

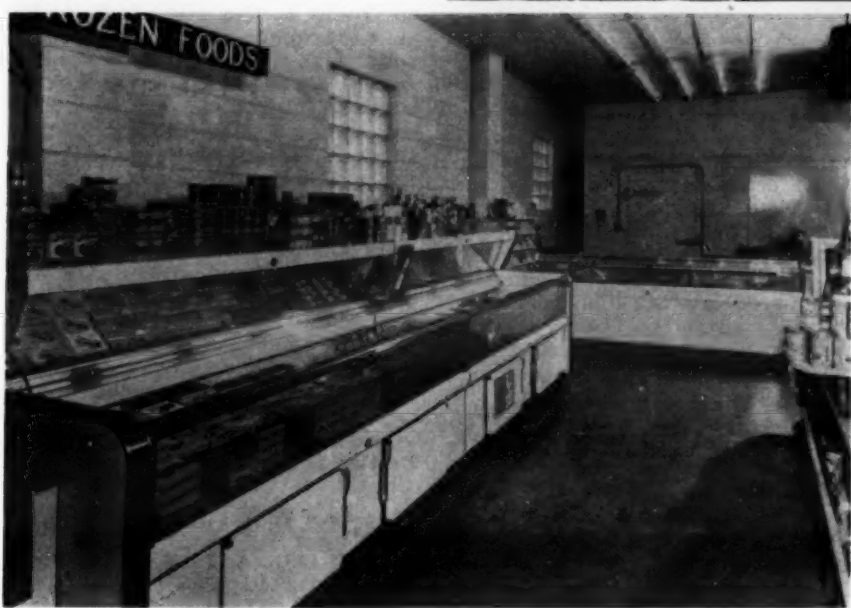
Modern Cabinet Design—Ahead of the Industry.
Self-contained Models Ready to Plug in.
Kelvinator Hermetic Units—Five Year Warranty.
Franchised Territory.

FOR ADDITIONAL INFORMATION WRITE:

TRUE MANUFACTURING COMPANY
2905 PINE STREET, ST. LOUIS 3, MISSOURI
Phone: LUcas 6700

Anchorage, Alaska Supermarket Gets Full Line of Refrigerated Fixtures

RIGHT: Lawrence Carr, owner of Carr's Food Center, stands to the left with Homer Mosely, owner of Homer's Refrigeration Service, making a final check of the Bally cases Mosely installed. They are examining a battery of four extra wide fruit and vegetable cases.



LEFT: Two Bally open style self-service frozen food cases are seen at the left with a Bally rear loading open style meat case at the back of the store. These cases are part of the complete line installed by Bally in Carr's Food Center.

ported Carr's Food Center as the first of its kind in Alaska.

Since then, Alaska has continued its modern trend toward supermarkets. A few more have already been completed while many others are underway. And all are turning to the refrigerated case and cooler to preserve and protect meats, dairy products, produce, and fruits and vegetables.

ANCHORAGE, Alaska — Alaska, one of civilization's last and coldest frontiers, refused to act the part recently when an Anchorage grocer opened what's believed to be the first self-service supermarket in the territory—with the proverbial "ice box," no less.

The "ice box" in the new market, however, is far from what the term implies. In reality, it consists of a complete line of refrigerated cases and coolers made by Bally Case & Cooler Co.

Carr's Food Center, America's northernmost supermarket, staged its grand opening after blanketing Alaska and northwest Canada with notices of its opening date. But Bally, rushing to meet its delivery deadline,

was hamstrung in Seattle by a maritime strike.

Finding no merchant vessel to make the trip, the dealer loaded his full shipment of cases on an open barge and had it towed behind a tugboat. The little tug fought its way through cold, roaring seas until it finally put in at Anchorage.

The entire cargo was intact. The shipment hauled ashore included new 2-deck dairy open-style frozen food cases, Commander self-service meat cases, and extra wide fruit and produce cases.

They were quickly hauled to the food center and installed by Homer Mosley, Bally distributor and owner of Homer's Refrigeration Service in Anchorage. It was Mosely who re-

Commercial Refrigeration

Food Publication Urges Stores To Devote More Space to Perishables

ST. LOUIS—In its current April issue, the magazine *Meat, Fresh and Frozen Food Merchandising* points out in its leading editorial that while 75.5% of the average retail food store's profit comes from the sale of its refrigerated perishables—meat, produce, dairy, and frozen foods—only 36% of the store area is devoted to these perishables.

Noting that floor space is too expensive—whether owned or rented, the magazine analyzes food store total sales and shopping areas as follows:

Dept.	% of Net Profit	% of Retail Shopping Area
Groceries	24.5	55.0
Meat	24.3	13.0
Produce	23.2	11.0
Dairy	21.0	7.0
Frozen Foods	7.0	5.0
(Administrative) ..	0.0	9.0
TOTAL	100.0	100.0

Tests by *Meat Merchandising* have shown that the bulk of the pure grocery volume can be had from only two rows of an item on a shelf. "It stimulates sales only a little

to use three or four rows instead of two. And if the merchant goes 'all out' using six rows, which take up three times as much space on the shelves as two rows, the volume, instead of tripling, is boosted by only one third," the publication reports.

The article is summarized by a plea to the food merchants to enlarge their perishable food departments to something more nearly approaching their fair share of the retail floor space—earned by virtue of the net profit they account for in the final reckoning.

SALES REPRESENTATIVE

Ice Cream Cabinet Manufacturer, established over 54 years, offers exceptional opportunity to experienced young man selling ice cream cabinets to ice cream manufacturers in the states of Ohio, Michigan, Indiana, Kentucky and West Pennsylvania. Exclusive territory. Salary and override on all sales. Include photo and complete details on background in first letter. Write Box 4274, Air Conditioning & Refrigeration News.

SATISFIED CUSTOMERS SAY: Oceans of Beer ...without a lick of trouble



Beverage-Air DIRECT DRAWS

Top-notch performance and trouble-free service! That's the story that hundreds of satisfied users tell about Beverage-Air Direct Draw Systems... a story that can add up to increased volume for you.

When you sell Beverage-Air, you sell incomparable service -

- No messy water tanks, troublesome air or water duct type cooling.
- No excessive, complicated controls.
- A perfect glass of beer drawn each time through non-toxic, sanitary lines that contain less than one ounce of beer from the keg to the faucet tip, at the correct serving temperature.

Beverage-Air Direct Draw Systems will give your customer satisfied service that adds up to "Oceans of Beer without a lick of trouble!"

Write today for complete information on Beverage-Air equipment, and direct mail literature for mailing to your customers.

THE PUNXSUTAWNEY CO.
PUNXSUTAWNEY, PA.

Branch Office: 480 Lexington Ave., New York 17



KOLD-HOLD truck refrigeration WILL PAY FOR ITSELF!

Hundreds of cases have proven that without truck refrigeration you may be doing double the work. Unrefrigerated trucks cut down on the length of hauls and the time the truck is on the road. Smaller loads and shorter runs mean double trucking — and double handling time in loading and unloading. Undelivered loads at the end of a work day present a problem.

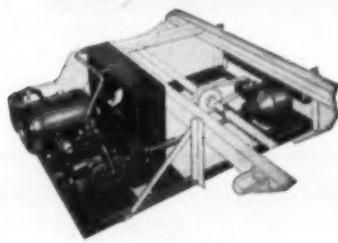
Kold-Hold dependable truck refrigeration saves this loading and unloading time. It maintains pre-determined temperatures throughout day-long hauls. Undelivered

loads can be left in the truck for the next day's delivery because your truck becomes "a cooler room on wheels."

One user reports, "If the results we have experienced with this installation are an indication of what we can expect in the future, you may be assured that all our new units will be Kold-Hold equipped. We are also replacing our other trucks with Kold-Hold as soon as possible."

Couple the savings you make when you "don't do it twice" with the fact that you have no spoilage losses and that your product is delivered in prime condition and you have the reason why Kold-Hold truck refrigeration pays for itself.

KOLD-HOLD can answer any refrigeration problem!



KOLD-TRUX

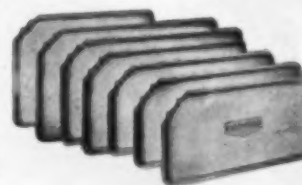


Tell us your truck refrigeration problems and send now for complete data and literature.

Which do you prefer . . . Mobile or Hold-Over truck refrigeration? Kold-Hold can give you either or a combination of both.

When your weather worries start, pick out the routes with the biggest refrigeration problems and call on Kold-Hold to give you a satisfactory solution. They will give you the right combination for your needs from such highsides as the Kold-Trux Mobile Unit, a mounted compressor, or make-and-break assemblies, coupled to such lowsides as Kold-Hold Hold-Over Plates, Thin Plates, Serpentine Quick-Action Plates, or Blowers.

Why not give us the details of your problems and let our engineers find the most efficient solution for you. Write today for details.



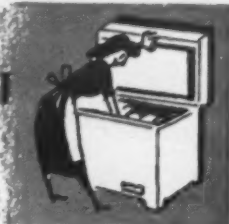
HOLD-OVER PLATES

KOLD-HOLD

KOLD-HOLD MANUFACTURING CO., 300 S. Third St., Minneapolis 1, Minn.



HOME & FARM FREEZERS



N.Y. Food Plan Assn. Forms, Hears How It Can Exert Strong Influence on Food Distribution

NEW YORK CITY — Generally speaking, the public does not discriminate between one food plan and another. If one is bad, they are all bad, in the public's eye.

That warning was sounded at the first annual meeting of the Food Plan Dealers Association by Hugh R. Jackson, president of the Better Business Bureau of New York.

"You people stand at a critical crossroad in relation to your future in this business," Jackson told the group. "You can be a nine-day wonder and disappear from the local economic scene, or you may develop into a continuing and enduring business group of large proportions which will substantially affect the whole food distributing process in this area."

'FRESH OUTLOOK' NEEDED

Jackson invited the association to join with the BBB in taking a "fresh look" at the bureau's recommended standards for advertising and selling of food plans, provide for review of all sales materials as well as public advertisements, cooperate in handling consumer complaints, assist and advise the BBB on technical problems relating to food plans, and help the BBB prepare booklets on food plans for distribution to the public.

He also offered the cooperation of the bureau in working out mutual problems.

Although the situation is not "wholly satisfactory" in New York, Jackson said, "we have either avoided or quickly curtailed some of the worst evils in this area which have run rampant in some other parts of the country."

The BBB president discussed food plan advertising, detailed the type of consumer complaints received by his office in the past two months, and reviewed consumer inquiries for information and educational material on food plans.

STANDARDS ISSUED LAST SUMMER

Regarding advertising, Jackson recalled that the BBB last May invited food plan operators to meet the bureau and work out a set of standards. He pointed out that some accepted the invitation and that the standards were issued in mid-June.

In addition to other things, the standards call for operators to make it clear that the purchaser must buy a freezer, to avoid use of the term "wholesale," to refrain from advertising specific savings, price per pound of meat, no down payment, etc., and to list extra charges conspicuously, along with grades of meat offered. Since the standards were set up, Jackson said, the bureau has investigated and corrected 93 violations.

"Now," he said, "there is a substantial degree of conformity in the metropolitan press, with somewhat less adherence in suburban and outlying newspapers."

In general, television advertising conforms to the standards to a high degree, Jackson reported. However, he said, some violations have been



NEW OFFICERS of the Food Plan Dealers Association of New York are shown being congratulated by Hugh R. Jackson (center), president of the Better Business Bureau of New York, who spoke at the group's first annual meeting. The officers are: (left to right) Ted Brody, secretary; Harvey Farber, president; (Mr. Jackson) Robert Corey, vice president; and Chris A. Blunt, treasurer. Ben Shindler, another vice president, was not present when the picture was taken.

noted in car-card advertising, particularly in interstate buses.

Turning to consumer complaints, Jackson said the bureau has received about 100 of these. Such a number, he declared is "too many" and represents "a danger signal." He said most of these complaints stemmed from "transactions resulting from advertising, rather than from advertising itself."

NATIONAL ASSOCIATION SUGGESTED

The association also heard an invitation to cooperate in "quickly establishing a national association that will include every phase of the freezer-frozen food industry."

This offer came in a letter from Ab Waxman, president of the Approved Freezer Food Plan Dealers Association of Los Angeles. He suggested consolidation of other food plan dealer groups in Detroit, Boston, San Diego, and other cities.

Waxman noted that only the most substantial operators in the Los Angeles area "still enjoy the credit of leading financial institutions, and the county is flooded with repossessions through misrepresentations."

He added: "On the basis of recourse arrangements, the operators have borne the brunt of losses."

At its meeting, the New York association elected its first officers and a 20-man board of directors, and adopted by-laws and an organizational seal.

New president of the group is Harvey Farber, president of Amana Products Corp., freezer distributor and food plan operator.

Elected vice presidents were Robert Corey, of Corey Farms, food plan dealer, and Ben Shindler, of Puritan Frosted Foods, a meat processor. Secretary is Ted Brody, of Utility Appliances, and treasurer is Chris Blunt, of Alsco, both food plan dealers.

In addition to the five officers, the following were elected to the board of directors:

Alan Fishkin, Bressner Radio; Henry Stein, Freeze Aid; William Lippman, Terminal Sales; Paul Miller, Wholesale Food Plan; Dan Zissman, Quality Food Plan; Dan Tucker, Dan Tucker Food Plan; Steve Sipos, Stevans Food Plan; Morris Negrin, Frozen Food on Wheels;

Clayton London, Lifetime Economy Food Plan; George Alpert, George Alpert Co.; Nat Friedson, Meat-O-Mat; Morton Tillman, Mann Refrigeration; Clarence Horowitz, Frosti Fresh; and Murray Albaum, L & P Electric.

Revco Appoints 4 New Home Freezer Distributors

DEERFIELD, Mich. — Four new distributors have been appointed to handle the Revco line of home food freezers, reports Harold Overmyer, vice president in charge of sales for Revco, Inc.

A. R. Blossman & Co. will cover 36 counties out of Covington, La. where the company's headquarters are.

Ellis Meares & Son of Fair Bluff, N. C. will cover 13 counties.

The entire state of New Mexico will be handled by Paul O. Burke & Co. of Albuquerque.

Illinois Appliance Co. of Peoria will cover the central part of Illinois.

Pittsburgh Dept. Store Has Freezer-Food Plan

PITTSBURGH—Spear & Co., Pittsburgh department store, has joined with Food Saver, Inc., also of Pittsburgh, to merchandise the "Spear's, Food Saver, Ben-Hur Food Plan" in the area, featuring the Ben-Hur line.

Bernard Kant, vice president and general manager of Spear, says the operation will include a store promotion program and an intensive outside selling operation, directed by Mort Casway of Philadelphia, president of Food Saver, Inc.

The food package, containing top grade meats and advertised frozen fruits, vegetables, and juices, is being supplied by Harris Foods, Pittsburgh's largest food wholesalers.

The deal was arranged through Olympic of Pittsburgh, distributor, and E. F. Hutelmyer, district manager.

Brant Directs New Bendix Builder, Commercial Divs.

SOUTH BEND, Ind. — Establishment of builder and commercial divisions to handle increased activities in these fields was announced recently by Parker H. Ericksen, director of sales, Bendix Home Appliances Div., Avco Mfg. Corp.

Ericksen named L. W. (Lou) Brant as manager of both divisions.

Bendix said the builder division was being reestablished after a lapse of several years, because of expanded activities in the builder field. Brant will work through the Bendix distributor organization to further the sales of the full line of Bendix home appliances to the home builders.

In the commercial division, Brant will act as a liaison between Bendix and the Telecoin Corp. in New York, which is the national distributor for coin-operated and commercial-type Bendix automatic washers.

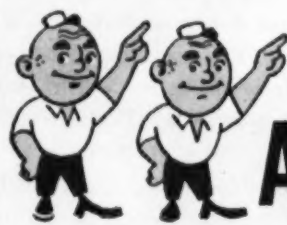
Brant, formerly of Indianapolis, comes to Bendix with a broad background of business management and merchandising experience. He was for several years with the Bowes Seal Fast Corp. where he was in advertising, sales promotion, and sales training work.

Brant helped establish one of the leading self-service laundries in the country in Indianapolis. He was president of the Indianapolis Self-Service Laundry Association in 1951.

Bluestein Files Business Name

BUFFALO—A business name has been filed in the Erie County clerk's office for Quality Appliances, 703 Broadway, Buffalo, by J. L. Bluestein.

Here is a small sampling of the variety of parts produced for Bundy refrigeration customers. Many of them involved close cooperation between Bundy engineers and the customers in solving problems of design and function. Are your tubing designs simple or complex? Do they call for serpentine coils, swaging, flattening, expanding, brazing, saddle jointing, bending to small radii, piercing, upsetting, slotting, threading, angle cutting, notching, flanging, flaring, reducing, tapering, other fabrication operations, or combinations of the above? Come to Bundy for the refrigeration industry's most reliable tubing, most helpful engineering talents, and most versatile fabrication facilities.



Almost no limit to what we can do for you with Bundyweld Tubing



**DEAN
GOLD
PLATES**

ANY SIZE
ANY SHAPE
MOST METALS

Write for
Technical
Data Book

COLD PLATES FOR: Ice Cream Cabinets, Soda Fountains, Farm Milk Coolers, Farm Freeze Cabinets, Window Displays, Food Counters, Sub-Zero Applications for Industrial chilling.

DEAN PRODUCTS, INC. 1042 DEAN STREET, BROOKLYN 16, N.Y. STerling 9-5400

WHY BUNDYWELD IS BETTER TUBING



Bundyweld starts as a single strip of copper-coated steel. Then it's . . .



continuously rolled twice around laterally into a tube of uniform thickness, and



passed through a furnace. Copper coating fuses with steel. Result . . .



Bundyweld, double-walled and brazed through 360° of wall contact.



NOTE the exclusive patented Bundyweld beveled edges, which afford a smoother joint, absence of bead and less chance for any leakage.

Bundy Tubing Distributors and Representatives: Cambridge 42, Mass.: Austin-Hastings Co., Inc., 226 Binney St. • Chattanooga 2, Tenn.: Fairson-Deakin Co., 823-824 Chattanooga Bank Bldg. • Chicago 32, Ill.: Lapham-Hickey Co., 3333 W. 47th Place • Elizabeth, New Jersey: A. B. Murray Co., Inc., Post Office Box 476 • Philadelphia 3, Penn.: Rulon & Co., 1717 Sansom St. • San Francisco 10, Calif.: Pacific Metals Co., Ltd., 3100 19th St. • Seattle 4, Wash.: Eagle Metals Co., 4755 First Ave. South Toronto & Ontario, Canada: Alloy Metal Sales, Ltd., 181 Fleet St. E. • Bundyweld nickel and Monel tubing is sold by distributors of nickel and nickel alloys in principal cities.

Deepfreeze Wall Banners, Lapel Badges Tell Public Dealer Offers Food Plan

NORTH CHICAGO — Distribution to dealers in all parts of the country of most of the sales aids introduced at the recent Deepfreeze national distributor conference is now underway, according to Robert A. Gilruth, advertising manager of Deepfreeze Appliance Div.

One of the new pieces of material is a satin wall banner pointing up the participation of the local dealer in a freezer-food plan. The 28 in. by 42-in. banner may be used on interior walls or in windows or may be suspended from the handle of an upright freezer. It is executed in white printing on a blue satin background and is sold to the dealer at cost.

Blue satin lapel badges carrying the same legend as the wall banners are also being made available at this time. They are 3 in. by 9 in. in size and are intended to help the dealer impress on store traffic the fact that he has a freezer-food plan for customer consideration.

Gilruth also said that shipments are being completed on a newly designed Deepfreeze decal for dealer's doors and windows. It is 7 in. by 14 in. in size, and is executed in a royal crest format in red, blue, and gold. Lettering on the decal explains that the dealer is an authorized retailer of Deepfreeze appliances.

JUST ASK US!

Turn to "What's New" Page for useful information on new products.

Ben Hur Dealers Hear They Should Sell Up to 30 Freezers Monthly for Success

SAGINAW, Mich. — "If you're going into the freezer-food plan, you must decide you want to sell at least 10, 20, or 30 freezers a month instead of one or two," advised Ray C. Graves, sales manager of Ben-Hur Mfg. Co., at a meeting for dealers staged by J. Geo. Fischer & Sons, Inc., distributor here.

In addition, the dealers were told by Ed. Morrison of Morrison Advertising, Inc., the Ben-Hur agency, that in 1953 Ben-Hur will have "the most thoroughly coordinated advertising program in the appliance industry."

Discussing general aspects of freezer-food plans, Graves declared that basically, "the plan is as simple as ABC. If you sell a hammer, you should try to sell the nails. If you sell a freezer, you should sell the food, too."

FREEZER FOOD PLANS ADVANCE FROZEN FOOD SALES 20 YEARS

"Freezer-food plans," he said, "have advanced the popularity of frozen foods as much as 20 years. In 1952, for example, there was an increase of 23% in the sales and consumption of frozen foods."

"Perhaps the most amazing thing," Graves told the dealers, "is that the freezer-food plan sells the freezer at full retail price, and so the dealer makes much more profit. This type of merchandising can be applied anywhere, in large or small towns, or the big cities."

"Some bad things have developed

in food plan merchandising," he admitted. "There has been some misrepresentation; certain salesmen have ballooned the true story; some advertising has been exaggerated, and there has been terrific over-pricing of freezers."

"The policy of 'any kind of food' is very definitely not all right. You must have satisfied customers to be successful; you must be honest, and you must give good quality and a fair price," he emphasized.

Any dealer who's considering going into the freezer-food plan type of promotion, Graves advised, should first find out who can process frozen meats for him, and, second, talk with his banker about financing.

BANKERS PREFER FREEZER-FOOD PLAN PAPER TO AUTOMOBILES

"Bankers who've worked with it think freezer-food plan paper is much better than many other types, including automobiles," Graves declared.

Before Morrison launched into his discussion of Ben-Hur advertising plans, the dealers were shown new slide film in color which outlined basic steps in selling the freezer-food plans. Points of the film are also covered in a manual Ben-Hur has prepared for dealers.

Ben-Hur advertising this year, Morrison said, is built around the theme "America's Finest" and aims at the five markets for freezers: the farmer, the small town dweller, the

gardener, and both the suburban and urban dwellers. National consumer publications on the company schedule include:

Better Homes and Gardens, Farm Journal, Good Housekeeping, Household, Life, McCall's, and Sunset.

Tie-in advertising in local papers has also been prepared for Ben-Hur dealers, with a carefully planned suggested schedule, Morrison told the group.

All the promotion efforts are aimed at pushing the company's five-model line of freezers, which this year includes a new upright 20 cu. ft. model. The other four models are chest type freezers in sizes of 9, 13.2, 16.8, and 20 cu. ft.

The upright model will be in the hands of dealers by the end of April, Morrison indicated. Designated as Model U-5320, this unit holds up to 770 lbs. of frozen foods and occupies a space 48 in. wide by 29 in. deep. Height is 70 1/2 in.

Three refrigerated aluminum shelves divide the interior into four storage compartments, the bottom one being equipped with an "easy-tilt" shelf that swings down to hold packages when placing or removing food from the freezer. Refrigeration coils are also provided at top and bottom of the aluminum liner.

Three small shelves are provided on inside of door, which has the "Flex-Flo" feature of the chest-type models to assure sealing.

Chief feature being promoted in the four chest-type models is "Desert-Dri," the name describing the wrap-around condenser on the inside of the outer shell of the cabinet. This, according to Ben-Hur, offers the advantages of "silent operation, greater cleanliness, more economical operation, uniform inside temperature, plus sweatproof walls."

Other design features of the 1953 models stressed by Morrison included the use of screw-type bulbs to replace the bayonet base type previously used for interior lighting and a mercury switch to operate the light.

To wind up the evening, the new Borden and Busse film on sales closing techniques was shown to the dealer group, after which they were served a buffet dinner prepared by the wives of Fischer employees.

Orange Crop Limit To Halt Rise In Sales Of Concentrate In '53

CHICAGO—There is not going to be a big surge in frozen orange juice concentrate sales in 1953 as there has been in past years, George Mentley, of Birds Eye Div. of General Foods Corp. predicted at the recent Frozen Foods Convention here.

The reason is that the expected orange crop this year will not be any larger than that last year, he said.

He pointed out that the concentrate industry has a capacity of 60 million gals. per year. Predictions are that 44 million gals. will be produced this year.

Consumer consumption of frozen orange juice is estimated at 1 million gals. per week. With a production of 44 million gals. and a carry over from last year of 6 million gals., it is theoretically possible that frozen food cabinets would be empty of juice at the end of 1953.

These estimates, he feels, should produce a fairly stable year in the concentrate market.

"If there are to be any blood baths, he declared, "it won't be because of any threatened glut of the market. It would just be some packer or distributor trying to capture a market, establishing brand, or some such thing."

Mentley emphasized that temperature variations occurring in the distribution of frozen orange juice is still one of the industry's biggest problems. Each individual distributor, he declared, ought to carry on an individual crusade to teach the importance of keeping frozen juice at constant temperatures in the distribution process. Every degree temperature rise represents a change in the character of the juice.

"If you want to test the truth of this," he suggested, "take a can of juice from your own stock and compare it with one taken from a retailer's cabinet."

Buffalo Store Files Name

BUFFALO—A business name has been filed in the Erie County clerk's office for the SDD Furniture & Appliance Co., 63 Sterling Ave., Buffalo, by Donald R. Tills.

Fort Wayne BBB Gives Consumers 7 Pointers On Freezer Food Plans

FORT WAYNE, Ind.—The majority of firms offering a freezer food purchase plan here will not misrepresent and will carry out their contracts, Mrs. Jean MacLeod, manager of the consumer division of the Fort Wayne Better Business Bureau, recently advised consumers.

The increasing number of freezer food plans in Fort Wayne has prompted a number of inquiries to the bureau, she said. Most of them concern the legitimacy of the plans and whether the purchaser will actually save the amount of money claimed by the salesman.

To safeguard against possible misrepresentation, Mrs. MacLeod advised consumers to:

1. Know the reliability and the responsibility of the dealer and his ability to carry out his guarantee.
2. Know the food supplier and his responsibility.
3. Disregard extravagant wholesale price claims. By buying in quantity it is possible to buy many items at less than the single item retail price, but business must still be done at a profit to the seller.
4. Beware of extravagant savings claims. Remember that your biggest economies may be in time, convenience, and a more economical use of food left-overs made possible by the freezer. By buying wisely and watching the market, it no doubt would be possible to make some savings.
5. Compare prices and quality of both freezers and frozen food before subscribing to a combination offer plan.
6. Do not be influenced by meat gradings such as "A," "AA," etc. Stick to the government grading terms, "Prime," "Choice," "Good," etc.
7. Keep in mind that you pay for the upkeep of the freezer and for electricity, also financing charges on both food and the freezer.

Big Boys Covers 18 Pa. Counties for Deepfreeze

NORTH CHICAGO, Ill.—Appointment of Big Boys Distributing Co., Sunbury, Pa., Deepfreeze distributor in 18 northern and northwestern Pennsylvania counties has been announced by Ben G. Sanderson, general sales manager of Deepfreeze.

The distributing organization is a division of Big Boys Auto Parts Co. and is headed by Barney A. Friedman, president. Assisting him are Leo Friedman, vice president and sales manager, Carl Moyer, advertising manager, and George Willard, service manager.



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It almost goes without saying that you can't beat Bundyweld for leak-proof, dependable performance in your compressor and evaporator coils and refrigerant lines, and in other tubing lines throughout your refrigerators and freezers.

But you get more than peace of mind with Bundyweld. For instance, you tap a wealth of fabrication facilities and engineering skills.

Do your tubing part designs call for difficult fabrication operations or easy ones? Do the designs call for unusual combinations of operations? Do they create problems

that may seem unsolvable?

If your needs call for a tubing part that is at all produceable, you can count on us to do the job—exactly to specifications at lowest possible cost. But say it isn't produceable. What then?

Just this. Bundy engineers who know their Bundyweld and refrigeration tubing problems inside and out will work with you personally until problems turn into solutions.

This help and teamwork pay off in time and trouble saved. And such a pooling of specialized skills—yours and the Bundy man's—frequently pays off in lowered ma-

terial costs and lowered production costs, too.

What if your company is geared for low-cost fabrication? Wonderful. You can count on us to ship clean, carefully inspected Bundyweld on time and in specified straight lengths. Of course, you can still summon all the engineering help you can use.

For tubing that's the standard of dependability, for fabrication facilities and engineering talents devoted to producing better tubing parts at lowest possible cost, come to Bundy, headquarters for small-diameter tubing.

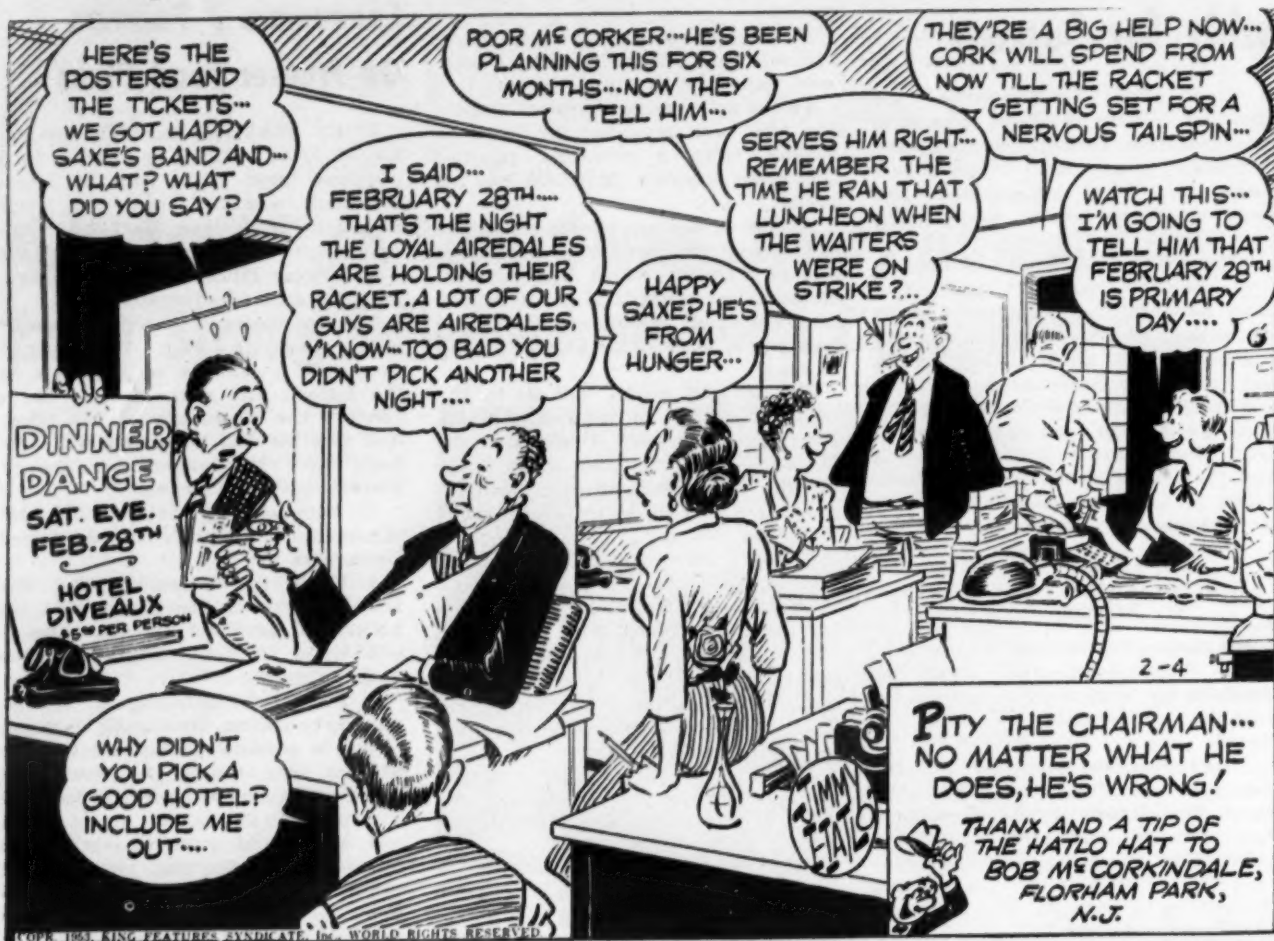
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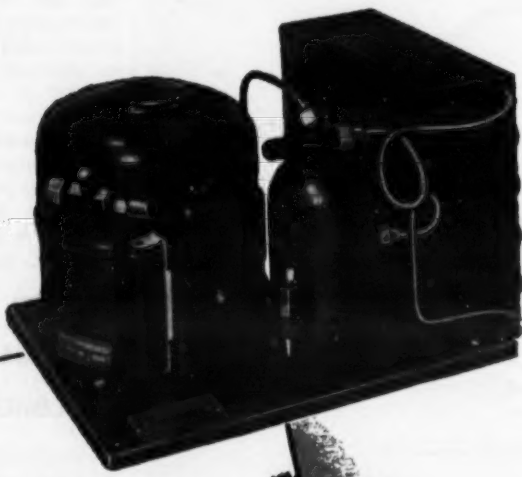
They'll Do It Every Time By Jimmy Halto



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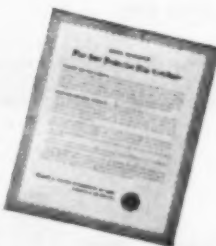
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VOLUME 68, No. 13, SERIAL No. 1,254, MARCH 30, 1953

"I have always felt that whatever the Divine Providence permitted to occur I was not too proud to report. The people are not served by pussyfooting, or by that sort of journalism in which nobody will ask who is the editor of a paper or the writer of an article, and nobody will care."—Charles A. Dana.

Depression Seems Entirely Unlikely

BIG QUESTION of the day is: How long will our great prosperity last?

Most business economists, including those in the Chamber of Commerce of the United States, look for prosperity to continue at least throughout 1954—unless there are major upsets in foreign affairs. Even should wars spread out further, employment and production would remain high.

U. S. Chamber of Commerce economists believe that depressions are not inevitable. Both business and government have learned a lot since the thirties about licking boom-and-bust fiascos. We the People understand counter-measures now; and are less likely to be caught napping if business begins to drop or slide sideways.

Fiscal policies can be a force in resisting depressions. By purchasing its own bonds from the public the Treasury can pour money into circulation. Through loans, or the guarantee of loans, government can make it easier for business to borrow money for working capital or investment in new plants and equipment.

Or, by means of its controls over banks, government can reduce reserve requirements so that banks can lend with more freedom. Experience during the last depression has shown how these controls can be used more effectively.

New factors in the situation include the Securities and Exchange Commission and the Federal Deposit Insurance Corp. With its tight controls over market speculation, SEC can prevent one of the evils which fostered the last depression. And each citizen's bank savings now are insured up to \$10,000 by FDIC. In itself this will prevent "runs" on banks and forced liquidations of assets at a fraction of their value.

Also relatively new are old-age and unemployment insurance systems, which provide a backlog of "eatin' money" against income failures because of age or loss of jobs. Furthermore, many business and industrial firms have begun pension plans since the thirties. They, too, provide insurance against the devastation of hard times.

Incidentally, there is a happier "climate"—and hence a brighter outlook—for business and businessmen. Probably this is the most important item in the entire "picture" for the next four years.

Most businesses are better prepared for a depression than they were in 1929. Products which meet basic needs resist depression, of course, and we have more of these than formerly. Refrigerator, electric washing machine, and radio sales, for example, held up well during the bleakest days of the thirties. Today, many, many new products of this nature are here, on the drawing boards, or almost ready for marketing.

New products mean new jobs, and new jobs mean continued prosperity. Best of all, business has a new sense of responsibility. It is less likely to begin major lay-offs and wage reductions in the face of threatened adversity. People as a whole are less likely to panic. Instead of allowing losses to pile up while factories and men remain idle, it seems safe to predict that businessmen will stride forward boldly in new directions.

Fears of a depression, it would appear, are unsubstantial and unsubstantiated.

RESTAURANT & BAR EQUIPMENT

392 Reserve Space At Restaurant Show In Chicago May 12-15

CHICAGO—The National Restaurant Association announced that as of a recent date, 392 nationally-known firms have reserved space for the 771-booth exposition to be staged in conjunction with the 1953 National Restaurant Convention.

The exposition and convention will be held at Chicago's Navy Pier May 12-15.

This year's show exceeds last year's by 100 booths, and both wings of Navy Pier will be used to house exhibits, the association said. Heretofore, only the north wing has been used for exposition space.

General convention sessions in the mornings will be held in the auditorium at the east end of the south wing of the Pier. Special interest sessions in the afternoons will be held in smaller meeting rooms in both the north and south wings.

A feature of the morning program on Wednesday, May 13, will be a presentation on take-home food service put on in cooperation with Lily-Tulip Cup Corp. This skit will inform restaurateurs on how to establish a take-home food service department, including equipment purchasing and merchandising of the products.

This session will also include a presentation on freezing of cooked foods by Andrew Seiler, Seiler Operations, Boston, and a demonstration of pie baking by George Carlin and Lou Alston of Swift & Co.'s Baking Laboratory. In addition to other things, Carlin and Alston will show how to freeze and bake raw pies.

During the Thursday morning session, Armin Kusswurm, general counsel of the National Restaurant Association, will discuss the food protection safety program. Among events scheduled for Friday morning is a shop talk session on "Best Ideas of Special Interest Meetings."

Special interest sessions will be held Tuesday afternoon for inflight food service operators, college and university food service managers, and department store food service managers. On Thursday afternoon, there will be sessions for cafeteria operators, drive-in operators, and industrial feeding contractors.

Ultra-Low Temperature Talk for Detroit ASRE

DETROIT—"Ultra-Low Temperature Refrigeration" will be discussed by Thomas J. Lopiccio of American Research Corp. before the Detroit ASRE section at 8 p.m. Monday, April 6, at the Engineering Society of Detroit, 100 Farnsworth.

Silex May Buy Majority Of Chicago Co. Common

HARTFORD, Conn. — Silex Co. here, manufacturer of commercial and domestic coffee makers, has acquired an option, good until June 30, on a majority of the common stock of Chicago Electric Mfg. Co., producer of commercial and home appliances.

The action was taken by Silex directors on the recommendation of Stanley M. Ford, president of Silex since January and former president of the Chicago concern. The directors said that if further investigation confirms the desirability of the acquisition, they would submit to stockholders a plan for additional financing for the purchaser.

Capitalization of Chicago Electric consists of 21,797 shares outstanding of 30,000 authorized no-par Class A cumulative participating preferred and a Class B common, of which there are 500,000 shares outstanding of an authorized 1,000,000.

Silex stock consists of an authorized 500,000 shares of common. About 268,000 of these are outstanding.

Although 1952 sales of coffee makers increased slightly compared with the previous year, Silex operations are expected to show a loss of more than \$340,000. A large part of the loss was due to a charge-off of certain development costs from prior years and to high initial costs of defense production.

'Rolling Cafeterias' Help Solve In-Plant Food Service Problem

LOS ANGELES—Development of "rolling cafeterias" of stainless steel, containing both heated and refrigerated compartments to maintain food at proper temperatures, has helped McCulloch Motors here solve its in-plant food service problems.

McCulloch Motors, a huge factory handling many vital defense contracts, is sprawled over a wide area in the California metropolis.

While there is standard cafeteria service available and several restaurants nearby, many employees have preferred to "eat on the job" rather than walking long distances during the noon hour.

Therefore, the company developed the "rolling cafeterias", serving hot luncheons as well as coffee-break snacks. The self-powered lunch carts have almost eliminated delays and lost motion during lunch hours.

The carts are built of stainless steel throughout, with the exception of the heavy iron platform on which the equipment rests. Approximately 12 ft. long, each unit is mounted on 5 wheels, including one pair of casters and a drive-wheel, and is operated by the Hyster power unit.

Moving at 5 miles an hour, the unit is easily steered by an attendant standing on the diamond-treaded iron platform around the power unit, and steering by means of a large wheel at the top.

Three such units are in constant use at the plant, covering scheduled routes through the day. Each cart contains a warming unit to provide proper temperature for ready-prepared warm-plate lunches, reached through sliding stainless steel doors in the center.

The upper glass-enclosed section is refrigerated to 38°, on the average, to chill milk, ice cream, salads, dairy



REFRIGERATED and heated compartments are provided in this "rolling cafeteria" at McCulloch Motors plant in Los Angeles.

foods, prepackaged sandwiches, and baked goods.

Some 22 sq. ft. of refrigerated space is available, with 11 cu. ft. in the "hot box" section. The refrigerated area is divided into three glass-enclosed compartments, fitted with glass doors which slide up and back.

Located at the rear are two thermos-type coffee urns, two stainless steel cream dispensers, a rack for paper cups, and a swing-out shelf which provides space for adding sugar and cream.

The top of the truck is provided with a drain rail so the unit can be operated outside during rainy weather.

At the rear of each unit, enclosed behind a heavy iron grille, is a 1/4-hp. refrigeration compressor. This supplies refrigeration for cold plates, located in the food cooling area.

Both refrigeration and heat are supplied by a 2-hour "service period" prior to the first run of the "rolling cafeterias" in the morning.

In two hours, the temperature of the refrigerated area can be brought down well below freezing if desired, while 150° heat, if desired, can be built up in the heated section. Current required for all of this service does not exceed 15 amperes per leg of the 120-volt, 3-wire circuit.

It is seldom necessary to reconnect the carts to electric power during the day, so efficiently is the stainless steel unit insulated, according to Sidney E. Campbell, executive of McCulloch Motors. Only when the lunch carts have been standing open for 15 or 20 minutes is it necessary to give them another "shot" of power.

Definite lunch-cart stops have been scheduled throughout the plant by the hour. With all three units in operation during the extended lunch hour, it has been possible to feed all employees who wish, without delay.

McCulloch Motors reports that the lunch carts have been extremely successful, with practically no maintenance required.

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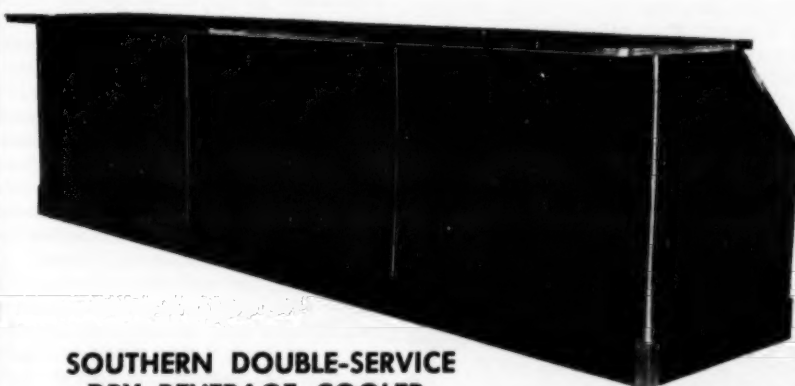
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MODEL BP—Southern's standard model. Features special acid-resistant, black or white porcelain finish. Increased capacity. Adjustable dividers. Heavy gauge stainless steel trim on doors, jams and rails. Rust-resistant iron walls and bottom. Built-in drain. Rockwool and Celotex insulation.

10' cooler, illustrated here, available with Micarta or Nevamar over-hanging counter top—900 12-oz. bottle capacity—complete with coils—\$278.40.

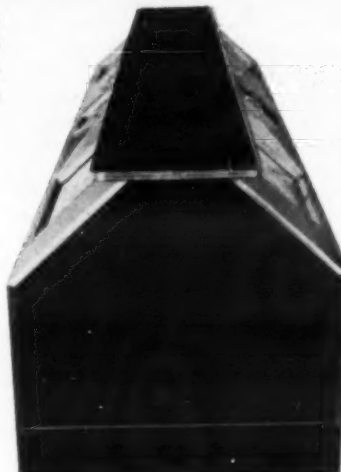


SOUTHERN DOUBLE-SERVICE DRY BEVERAGE COOLER

MODEL DS—Service from either side, fast cooling, economical operation and less expense. Heavy duty insulation keeps beverages at their chilled best. Any length. Extra capacity. Water stations on either or both sides.

Thousands in service. Nineteen years of refrigeration experience built into each unit. Choose your own finish—any wood finish, black or white porcelain or stainless steel.

Each Southern Double Service Dry Beverage Cooler is custom built and ideal for the following counter shapes:



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Beverage Coolers in lengths 4' to 18'

(Hard rubber, lift-up doors available on any cooler at slight extra cost.)

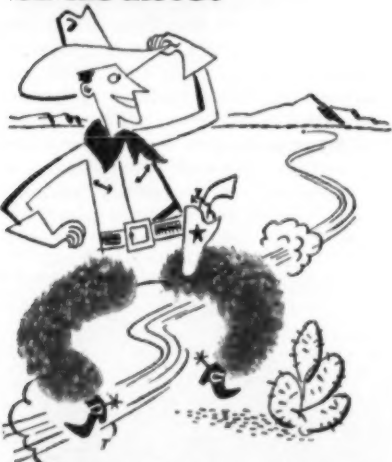
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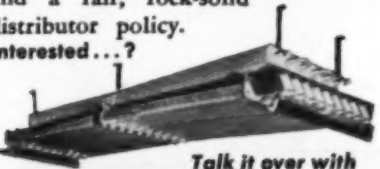
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Air Conditioning Automobiles

Paper Points Out Basic Elements of Air Conditioning, Problems of Applying Them To Cars, and Compromises Made To Develop Satisfactory System

By M. W. Baker and D. C. McCoy,
Frigidaire Div., General Motors Corp.*

Air conditioning for human comfort grew slowly from the '20's until within the past few years. Since, the business has increased at a terrific pace. Interest is now developing in providing summer comfort for the occupants of automobiles. For many people, the only gap in summer comfort today lies in their individual automobile. Their homes are air conditioned; their offices are air conditioned; theaters, restaurants and other places which they frequent are air conditioned; and if they travel on railroads, ships or airplanes, these are air conditioned.

It is only logical that interest has developed in air conditioning the automobile. People will tolerate discomfort only until the means are available to relieve their discomfort.

Advantages of Conditioning Are Numerous

Air conditioning the automobile will allow the user to stay neat and well groomed, reduce fatigue, eliminate wind, reduce noise, shut out insects, dust, pollen, and rain, thus permitting greater use of the automobile under conditions when many people hesitate to drive.

The idea of air conditioning the automobile is not new. Various attempts have been made to do so in the past. In the Southwest, where temperatures over 100° F. make highway travel next to intolerable in the summer, air streams directed onto the occupants from open windows and reverse door wings were a source of partial relief. Primitive cooling expedients have been tried, such as tubs of ice carried on floor. The evaporative or the so-called "swamp" coolers have been widely used. Recently various tailor-made assemblies of mechanical refrigeration equipment have appeared.

The market now seems to justify production of a factory-built system. Home, business, office, railway, airplane, and steamship air conditioning installations have definitely passed from the luxury to the necessity status. It is reasonable to expect that automobile air conditioning will eventually do the same, since the automobile is now left as the high point of discomfort in our daily summer activities.

The basic elements of an air conditioning system are the same regardless of where the system is used. These are:

1. Refrigerant.
2. Source of power.
3. Compressor.
4. Condenser.
5. Liquid refrigerant control.
6. Evaporator.

7. Fans and air distribution system.

8. Temperature and miscellaneous controls.

The over-all problem is to apply these various components to an automobile and make the necessary compromises in their design and application to cool the automobile to the satisfaction of the user without affecting the utility or performance of the car itself.

User Satisfaction Isn't Fixed or Static

Satisfaction of the user is not a fixed or static quantity. Accepted air conditioning practice covers a range of conditions known as the summer "comfort zone" representing satisfaction for a majority of people. Consequently, the middle of this zone, namely 78° F. dry bulb, 50% relative humidity, with an air velocity over the body of 25 ft. per minute is used as far as possible as a standard of design for summer human comfort. However, some variation of control is advisable, as women and people over forty usually prefer a degree or two warmer dry bulb conditions, and there are some rugged individuals who insist on lower temperature.

Let us now consider the basic elements of an air conditioning system, some of the problems of applying them to the automobile, and some of the compromises which have been effected in the present stage of development to produce a satisfactory system.

1. **The Refrigerant.** In addition to desirable operating and chemical characteristics, the refrigerant for use in any air conditioning system must be non-toxic. Refrigeration equipment, being made by human hands and subject to mechanical failures, may develop leaks. Consequently, the hazard of a toxic refrigerant must be eliminated. Fortunately, the "Freon" refrigerants developed by Frigidaire Division of General Motors Corp. in the late '20's, and now universally used by the entire refrigeration industry, meet all the requirements from this standpoint and are otherwise satisfactory, so we can dismiss any further discussion of this item. "Freon-21" is used in Frigidaire systems.

2. **Source of Power.** A reliable and dependable source of power must be available to drive the refrigeration compressor and evaporator fans required on an air conditioning system. The most logical power sources on the automobile are to harness the car's motor to drive the compressor and use the car's electrical system to drive the evaporator fan. The fan drive presents no problems, hence needs no discussion. The major problem is the use of the car motor as a source of power to drive the refrigeration compressor.

Driving the refrigeration compressor by belting it in some manner to the car motor is the simplest and most logical means of transferring this power. Most refrigeration applications require a practically constant compressor speed, as opposed to the wide variability of speed of the automobile motor. Variable speeds due to customary operating characteristics of the automobile motor produce one of the major problems of automobile air conditioning design.

Various methods to solve this problem have been tried. Magnetic drives and clutches have been used; a hydraulic drive with speed modulating valves has been tried; and even a separate gasoline engine driven compressor has been tried. Experimental work is still under way with these. Within limits, compressor capacity varies directly with speed.

From a refrigeration standpoint, the variable compressor speed produces two problems: inability to produce enough refrigeration capacity at low motor speeds to do the job; and excess capacity at high motor speeds which throws the compressor capacity and evaporator capacity out of balance, so that the evaporator ices up and becomes ineffective.

Compressor Driven Directly From Crankshaft

On Frigidaire automobile air conditioning systems, the compressor is driven directly from the crankshaft by a belt drive with appropriate speed ratios obtained by pulley sizing. The compressor is free to vary in speed with the motor speed. Variation of capacity due to variation in speed is controlled by another means inserted in the refrigeration system itself, which will be described later.

3. **The Compressor.** Both reciprocating and rotary types of compressors have been used in automobile air conditioning to date. The Frigidaire Meter-Miser, a rotary-type compressor, successfully used for many years in our household refrigeration and in commercial and air conditioning applications, offered the best immediate solution for simplicity, minimum space and weight requirements, shape, adaptability, dependability, better balance at high speeds, and for precision manufacture.

The standard Meter-Miser is an assembly consisting of a compressor and electric motor built within one casing. For automobile service, the electric motor has been eliminated. A shaft with shaft seal and with a pulley outside of the casing has been added. The pulley is belted to the car motor crankshaft.

This compressor, shown in Fig. 1, is a two-vane rotary of 7.14 cu. in. displacement. At 1,750 r.p.m., it develops approximately 17,500 B.t.u./hr. at 35 lb. suction pressure and 190 lb. head pressure, this condition being obtained at approximately 40 m.p.h. car speed with the motor to compressor pulley ratios used on current applications. The compressor parts obtain lubrication by forced feed from a small rotary pump, thence through grooved bearings. Oil circulation to the rest of the refrigeration system is held to a minimum, following good refrigeration practice.

4. **The Condenser.** The condenser itself offers no particular fundamental problems. However, to apply the condenser to the automobile requires consideration of shape, space, and replacement. It must be installed where the coolest possible air will always be available to condense the refrigerant of the air conditioning system. The condenser must function properly and yet cause minimum interference with the water cooling system of the car motor, and raise the temperature of the cooling air to the car radiator as little as possible. Providing ample air volume for proper performance while standing has been a major problem to solve.

Fig. 2 shows an installation of a current Frigidaire system. The condenser is located in front of the lower part of the car radiator. A liquid receiver is placed below it. The tubing used in the condenser is the standard Frigidaire flat tube used on many of our air cooled commercial compressors, which permits a maximum of condenser surface to be put in a minimum of space. The same core is used on all current installations,

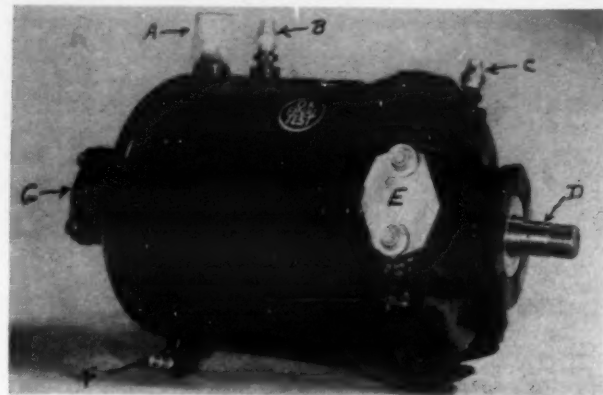


FIG. 1—Frigidaire Meter-Miser adapted for car air conditioning. A, pressure relief valve; B, gauge and purge connection on discharge side; C, gauge connection on suction side; D, shaft extension for drive pulley; E, connection for suction lines; F, oil drain; G, discharge connection.

but the fittings are different to conform to the requirements of different makes of cars.

5. **Refrigerant Control.** Methods of controlling liquid refrigerant commonly in use by the industry are: manual control, automatic expansion valves, thermostatic expansion valves, capillary tubes, and float valves. Of these, the thermostatic expansion valve best meets the over-all needs of application to automobile air conditioning.

Manual control is completely undesirable; the automatic expansion valve and capillary tube do not provide the flexibility required; and float valves are impractical because of instability of position due to normal operating characteristics of the automobile. The Frigidaire system uses the same thermostatic expansion valves which are used in commercial and industrial refrigeration applications, and in many air conditioning applications. Nothing new in design was necessary to meet the requirements of automobile air conditioning.

Under the heading of "Refrigerant Control" we have a new and unique feature in use on Frigidaire automobile air conditioning systems. This is a metering solenoid valve which is used to offset the variable speed of the compressor and resulting variable capacity. It also provides the means of shutting down the system when cooling is not required.

Expansion Valve Inside Cooling Unit, Fan Housing

The thermostatic expansion valve which controls the flow of liquid refrigerant into the evaporator is mounted inside the cooling unit and fan housing. When cooling load is normal or high, refrigerant flow is through the condenser and receiver, and thence to the thermostatic expansion valve and evaporator. The metering solenoid valve is normally open and is controlled by the thermostat in the return air to the evaporator. When open, a mixture of liquid and gaseous refrigerant comes from the condenser through a "T" and then through the solenoid instead of into the receiver.

When return air temperature to the evaporator drops below a given point due to excess compressor capacity at high speed or low ambient, the thermostat opens the solenoid valve and bypasses refrigerant to the suction side of the compressor. When open, some liquid mixed with gas passes through the metering solenoid valve, evaporates and returns to the suction side of the compressor.

The orifice in this valve is selected so that the small amount of liquid is gasified in passing through the valve and thus returns to the compressor in the gaseous state. Pressure is maintained on the receiver by a check valve when the solenoid is open. When return air temperature rises, the thermostat closes the valve and allows full compressor capacity to be applied to the evaporator. The metering solenoid valve system gives equivalent results to controlling the compressor speed.

6. **The Evaporator.** The purpose of an evaporator in a refrigeration system is to absorb heat from the space to be cooled. In an air conditioning system, the heat is brought to the evaporator by means of circulating air moved by fans which are a part of the evaporator. In all refrigeration systems, it is essential that a minimum of frost or ice collect on the evaporator. On air conditioning systems, it is customary to balance the compressor and the evaporator so that surfaces of the evaporator are around 35° F. or upward, since water freezes at 32° F.

Evaporators Have Close Spaced Fins

In order to get as much heat absorbing capacity in as small a space as possible, air conditioning evaporators are built with very close spaced fins. An unbalanced condition resulting in surface temperatures below 32° F. will very quickly ice up the spaces between these fins, and make the evaporator completely ineffective. The importance of balancing the system to produce an evaporator surface temperature of 35° F. or above is, therefore, an essential feature of successful design. The metering solenoid and associated control thermostat accomplish this with widely varying compressor speeds.

Because of the extremely small volume of space in an automobile passenger compartment, compared to other types of air conditioning installations, the addition of some fresh outside air to the occupied space is very important.

Table 1 compares three typical installations using customary design practice. A typical room, comfort conditioned by a 1-hp. window unit, with six occupants and a volume of about 3,400 cu. ft., provides 567 cu. ft. of space per person. A typical railroad coach with a volume of 5,000 cu. ft. and 56 occupants, provides 89 cu. ft. of space per person. Approximately 160 cu. ft. of space shown for a typical automobile air conditioning system, providing for 5 occupants, reduces the cu. ft. of space per person to 32. Hence, the importance of addition of fresh air to an automobile air conditioning system.

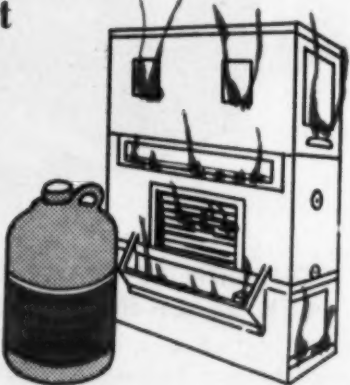
Fresh air is provided to the Frigidaire systems by a scoop on the side of the car which picks up the air and brings it into the cooling unit compartment, mixing it with the recirculated air from the car.

Removal of moisture is one of the functions of an air conditioning system. This moisture comes from the atmosphere, and is exhaled and evaporated from the occupants of the car. Excess moisture is condensed from the circulating air by the evaporator, runs off the fins into a drain pan at the bottom of the evaporator compartment, and is then discharged through a drain tube to the road beneath the car.

The installation of the evaporator takes up a relatively small space, and the equipment is readily accessible (Concluded on next page)

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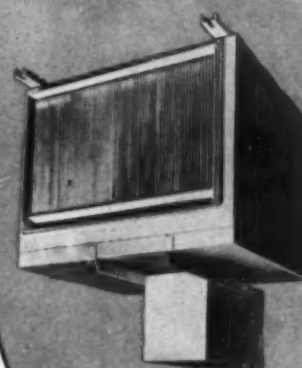
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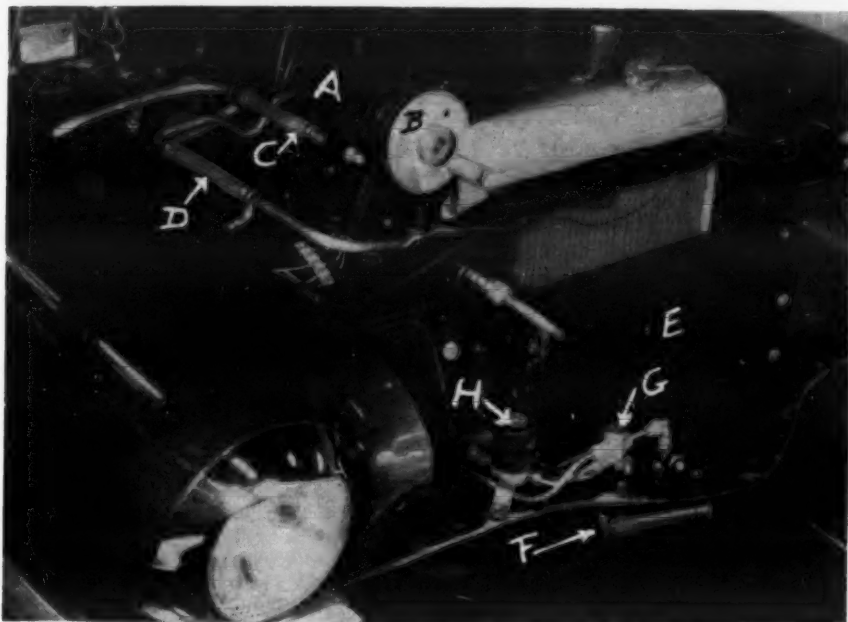


FIG. 2—Installation of high side and metering solenoid on Cadillac. A is compressor; B, drive pulley and belts; C, flexible connector in suction line; D, flexible connector in discharge line; E, condenser; F, receiver; G, check valve; H, metering solenoid.

Automobile Air Conditioning

(Continued from preceding page)

for service. The discharge of the cooled air into the occupied space of the car and return of the warm air to the evaporator and fans is provided for by cutting through the package shelf at the rear of the car to provide the necessary air inlets and outlets. This gives a simple and easily made installation.

Control of car interior air temperature is obtained by a thermostat in the return air from the car to the evaporator. Such thermostats must

be rugged in construction to withstand the shocks encountered in automobile operation. One of the thermostats being used on Frigidaire automobile air conditioning installations is a mercury column type which we have successfully used on railroad and other mobile installations subject to severe shock. It represents no new development but is ideal for this application.

7. Fans and Air Distribution System. Fans to circulate the air through the evaporator and through the oc-



FIG. 3—Control panel on dash includes A, on-off switch; B, blower motor controls; C, temperature regulator.

cupied space of the car provide no particular design complications. In a typical installation the fans are mounted on the outside of the evaporator housing. On some installations, these are mounted inside the housing. This is a matter of location detail, rather than a problem of fundamental design. Squirrel cage type fans are used, operated by electric motors, which receive their source of power from the regular automobile electrical system.

Fan Current Consumption Small

Current consumption of these fans is relatively small (18-20 amperes at 6 volts) and offers no particular power problem, compared to the power problem involved to obtain enough energy to drive the refrigeration compressor.

Proper air distribution within the car is a very important problem, one of the most difficult in the application of air conditioning systems to the automobile. Various types of air distribution systems to circulate the cooled air to the occupied space of the car have been tried. In any opening remarks discussing the customary design conditions for an air conditioning system, recall that toler-



able air velocity over the average individual for summer comfort was about 25 ft. per minute.

Air Distribution Study Vital

Very careful study of air distribution system is, therefore, necessary to stay as close to this limit as possible, because of the small volume per occupant pointed out previously, discussed in connection with Table 1. As even general distribution of air as possible throughout the car interior is desirable. In one method of air distribution the cooled air is introduced into the car interior by louvered openings located in the corner of the package shelf. The air discharged from these openings is directed along the top of the car interior toward the front. These are located along each side of the car above the windows.

Adjustable air outlets in the ducts near the occupants allow some of the air flow to be manually adjusted to suit the comfort of the individual.

Radiant heat from the sun creates a problem associated with air distribution. Some control is required so that the occupants on the shaded side will not be uncomfortable due to low temperatures, and those on the sunny side uncomfortable due to high temperatures. This problem is encountered in railway passenger car

cooling, and has been satisfactorily solved. Manual control of outlet air takes care of it in the present automobile system.

Cold Air Must Be Kept From Glass Surfaces

Another major problem of air distribution is to keep the cold air discharged from the aid distribution system away from glass surfaces of the car to avoid condensation on the outside of the glass. Correct direction of air flow is, therefore, an essential feature of design and application to achieve this objective.

Return again to Table 1 showing comparative air deliveries which we used to point out the relation of volume to occupants; the other information not previously discussed illustrates further reasons why air delivery is important.

The typical 1-hp. window unit used to cool the stationary space produces about .76 tons of refrigeration, handles 4,480 cu. ft. of occupied space per ton of refrigeration with an air delivery of about 300 cu. ft. per minute. This produces a ratio of space to air delivery of 11.3.

The typical railroad coach requires approximately 7½ tons of refrigeration, handles 667 cu. ft. of occupied space per ton, with an air delivery of

(Concluded on next page)

Questions & Answers on Car Cooling

To date, perhaps 10,000 automobiles have been air conditioned, but within a few years 10% of all new cars sold will have this modern "accessory," predicts a Chrysler executive.

The figure of 500,000 or more units annually will be more, for example, than all the room coolers sold in 1952, and so interests the air conditioning industry considerably. It also interests the automobile manufacturer, as the talks published on these pages indicate.

The papers herewith were presented before the national Passenger Car, Body, and Materials meeting of the Society of Automotive Engineers held in Detroit last month.

Following are some of the questions, answers, and comments which came after the formal presentation:

"It appears almost imperative to install air conditioning at the factory," said an engineer from Eaton Mfg. Co., producer of car heaters. "The components could be installed on the car in the assembly line, and then the car could go to a special shop for installation of tubing, purging, and charging. Ultimately we'll need a unitized package to be made by the accessory manufacturer and shipped in a package for mechanical installation."

"Some people who scoff at paying that much extra for air conditioning immediately change their minds when they ride in an air conditioned car in summer," commented P. J. Kent of Chrysler.

"I believe cooling equipment will become like radios and heaters. Air conditioning may prove the convincing sales tool for the car salesman."

Clyde R. Payton of Willys-Overland, who said he'd driven three of the prewar Packards equipped with air conditioning and "hated to part with the third one last summer," commented:

"One of my early surprises was that car cooling turned out to be an all-year device. I would turn it on low in winter with the heater going also to keep out moisture."

"Driving an air conditioned car with the windows closed gave just half the fatigue on long trips. We found that we could drive twice as far in a day with no more fatigue than normal because there was no wind and noise from open windows to bother us," Payton recalled.

"Smoking was a problem, however," he admitted. "We could stand a maximum of two people smoking cigarettes, but we could stand just one cigar for one minute. The prewar Packard system had no provision for fresh air except through infiltration. Even with one cigarette smoker the odor in the car in the morning was most unpleasant."

What will the cost of car air conditioning be if the number reaches 500,000 a year?

"Prices will come down," Kent said.

"I think the answer to the cost question is to consider the installed cost of a 1-hp. window unit," answered McCoy of Frigidaire. "As

near as my memory serves me, this is between \$400 and \$500. With the current cost of automobile air conditioning around \$600, I personally don't think there's much leeway."

Does the air conditioning condenser being in front of the radiator have an adverse effect on car engine cooling in summer?

"There is a problem of cooling, especially at idling speed," Kent answered. "You have to compensate. We have split the condenser into two sections and have added radiator capacity."

"There's no surplus capacity in any car radiator today," commented Joyce of Ford Motor. "Any air conditioning system will need additional car cooling capacity."

Has any thought been given to providing holes, knockouts, and mounting pads in every car to facilitate the installation of air conditioning by the car dealer after delivery?

"This will have to wait until the volume of air conditioned cars justifies it," said Kent.

Is heat-resistant glass necessary?

"It isn't essential, but it will help on the sunny side," Kent commented. "We have conducted tests in the desert that showed that such glass only lowered the average inside temperature 1° to 1½°. Psychologically, though, it is certainly desirable."

"Sun effect is a serious problem and radiant heat is very important," McCoy added. "We found this in the early railroad car systems."

Does air conditioning affect car performance?

"If you take away horsepower from the car engine, as you do with air conditioning, you'll affect car performance and mileage, but this will vary with several factors," replied Kent. "As far as I'm concerned, the comfort obtained with air conditioning more than compensates for whatever effect it may have on performance."

Is there an ideal temperature difference between the car and ambient temperature?

"After deciding upon the design temperature, it is customary to let the inside temperature go up as the ambient temperature goes up," McCoy explained.

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Air Conditioning for Automobiles--

(Concluded from preceding page)

2,400 cu. ft. per minute, giving a ratio of space to air delivery of 2.1.

The typical automobile air conditioning system produces about 1½ tons, cools 128 cu. ft. of space per ton, with an air delivery of 300 c.f.m., resulting in a space to air delivery ratio of .53.

This small ratio of total space to volume of air delivery makes it very difficult to distribute the air without excessive velocities over the occupants. Therefore, air distribution must be very carefully worked out if maximum comfort for the occupants is to be provided.

Air Distribution Problem

One of the problems of the early installations of air conditioning in railroad passenger equipment was that of proper air distribution to avoid excess air velocity over occupants. The ratio of space to air delivery on these typical installations indicates that this problem is approximately four times more critical in the automobile than in the railroad coach, and approximately twenty-two times more critical than on the application to stationary installations.

Another important fact to note from this table is the relation of air

delivery in cu. ft. per minute to the tons of refrigeration required for the different types of applications. Approximately 300 cu. ft. of air delivery per minute is required per ton of refrigeration for all applications. When claims are made that automobile systems have capacities of 3 or 4 tons of refrigeration, such claims should be "taken with a grain of salt." Such capacity probably is not there, or if it is, the required air delivery to produce such a capacity on an automobile installation can readily approach the point where it will be necessary for the passengers to hold their hats to keep them from being blown off by the resultant velocity. It may far exceed the design velocity of about 25 f.p.m.

This also points out one of the undesirable features of the evaporative or "swamp" cooler. Cooled outlet air velocities and volumes from these devices are in general proportional to car speeds. The velocity over the passengers can easily exceed the desirable limits specified for summer comfort cooling as they are usually installed without any definite air distribution system. Further, performance of this type of cooling is directly related to the wet bulb temperature of the air in which the cooler is being used.

It is only successful in dry climates having low Summer wet bulb. The

atmosphere created by such a device approaches saturation at cooled space temperatures.

Consequently, the conditions of the summer comfort zone may not be attained, insofar as relative humidity is concerned. The atmosphere is likely to be damper than that which can be supplied with a properly designed and controlled mechanical system. Thus, they fall short of providing a complete comfort cooling job as they provide only one of the three requirements, namely some measure of dry bulb temperature control.

Experimental Dash Control Installation

Fig. 3 shows an experimental dash control installation. This system uses a variable speed fan control, has a toggle switch to inactivate the system, and an adjustable temperature control, permitting a small change in the range of temperatures provided by the system. Some of the Frigid-aire systems do not have variable fan speeds or adjustable temperature controls. This is a matter of choice by the car manufacturer, and offers no difficult complications in arranging the system.

Now that the design problems have been discussed, the next question is "What does the customer get for his money?" What kind of performance will this system produce?

Based on tests to date, on a 100° F. day, it is possible to produce com-

TABLE 1—COMPARATIVE AIR DELIVERY CHART

	Vol. of Space Cu. Ft.	No. of Occupants	Cu. Ft. Space/Person	Tons Ref.	Cu. Ft. Ton	Air Del. CFM	Ratio Space To Del. Per Minute
Window Units 1 hp.	3,400	6	567	.76	4,480	300	11.3
RR Coach Car	5,000	56	89	7.5	667	2,400	2.1
Automobile	160	5	32	1.25	128	300	.53

fortable interior conditions in approximately six city blocks of driving, with suitable driving conditions. With 90° F. ambient, it is very easy for the interior of a car to reach 140° F. sitting in the sun.

If driving conditions are such that the take-off and subsequent driving are accomplished at low engine speeds, a longer time will be required to reach comfortable interior conditions.

At open road driving speeds, conditions within customary comfort ranges are readily maintained.

The required equipment has been worked out so that it does not conflict with the regular heating or ventilating system on the cars. The beauty and utility of the cars have not been affected by these installations, nor has the mechanical or driving performance been noticeably affected. Equipment is as readily accessible for service as any of the rest of the car. Price-wise, the addition of comfort cooling will probably be classed as a luxury at the

present, at least by the mass automobile buying market.

Public Interest Indicates Demand for Air Cooling

Public interest indicates a demand for air conditioning in automobiles. Basic fundamentals of such systems are well understood and are being successfully applied in equipment which will be available this year. The future will, of course, bring further improvements and refinements determined by customer reactions and field experience.

Most innovations begin their marketing to the so-called "carriage trade." As the benefits of their use become known, production increases. As production increases, price decreases to the point where the product becomes available to the mass market. This has been true of your automobile industry and our refrigeration industry. It is the American way of life. No good reason is apparent why it will not follow in the case of automobile air conditioning.

G-E Offers Course for Air Cooling Salesmen

BLOOMFIELD, N. J. — General Electric's home heating and cooling department has announced an application training program for personnel of its dealers and distributors.

The course, which runs two days, covers such subjects as house construction, how to make a comfort survey, calculation of heat loss and cooling load, equipment selection, proper layout of ductwork, and other points related to installation.

In announcing the training program, S. J. Levine, general manager of the G-E home heating and cooling department, said that the correct application of equipment would be an important factor in development of the home cooling market.

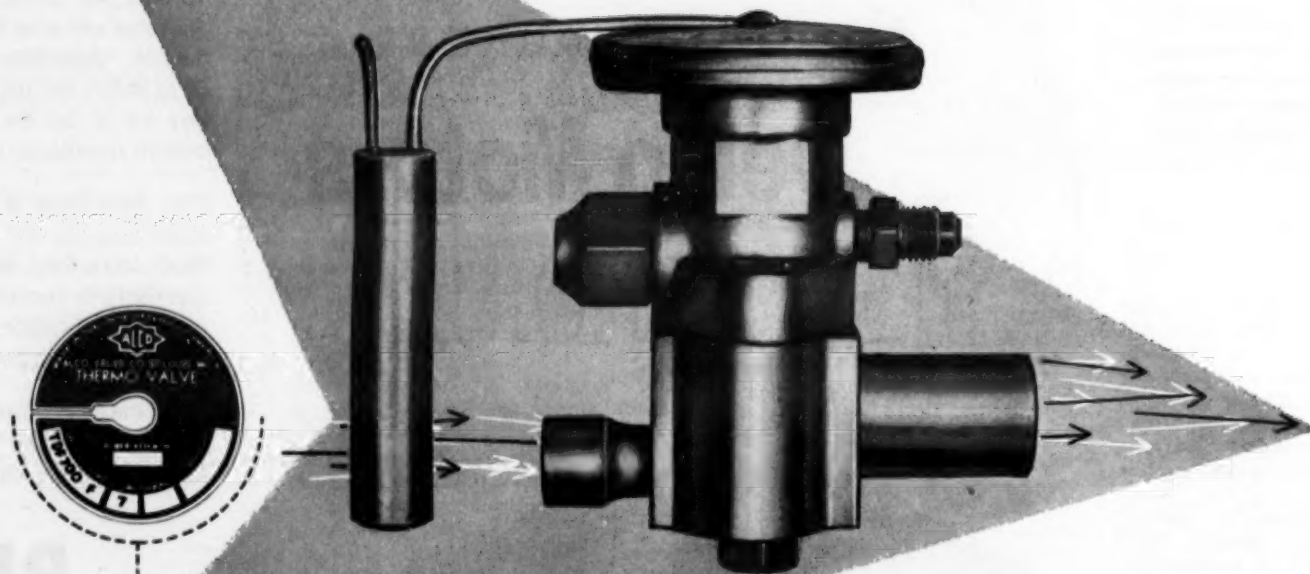
The G-E training course, he added, is to provide G-E dealers and distributors with all the latest information in equipment and application techniques so that they will be able to make efficient and reliable installations at the lowest possible costs.

Initial classes were held at G-E headquarters here. Then the program was taken into the field for the full dealer-distributor coverage.

The program is under the direction to C. M. Toelaer, application engineer for the G-E home heating and cooling department.

A recognized authority in the appliance field, Toelaer is a member of several committees of the National Warm Air Heating and Air Conditioning Association.

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What's New

When requesting further information on new products, please use "Information Center" form.

Larger Ice Maker Models Added to Scotsman Line

—KEY NO. C-351—

ALBERT LEA, Minn. — Six new models of the Scotsman "Super-Flaker" have recently been announced by the American Gas Machine Co., Div. of Queen Stove Works, Inc. here.

Scotsman Super-Flakers are available in three capacities: 350 lbs. daily, 550 lbs. daily, and now for large users, 1,000 lbs. daily of Super-Flaked ice. Each capacity machine is available in either the completely automatic storage-type unit or the continuous-flow type unit, according to the company.

The storage-type unit is completely automatic in operation. After the machine is turned on, the heavy, stainless steel storage bin is kept full of Super-Flaked ice. The machine turns itself on and off automatically. The



SCOTSMAN SUPER-FLAKER model SF-3WS.

storage bin units have a storage capacity equal to 10 to 12 hours output, it is pointed out.

The continuous-flow type Super-Flaker produces a continuous flow of Super-Flaked ice while it is turned on.

Low cost operation is one of the most important features of the new Scotsman Super-Flakers. The SF-1C, 350-lb. size Super-Flaker, operates at a maximum output for only about 20 cents a day under average operating conditions. The SF-2C, 550-lb. size, operates at 25 cents a day. The SF-3, 1,000-lb. size, operates at full capacity for as little as 40 cents a day.

The exclusive, patented freezing and flaking mechanism has no moving parts to wear out, no complicated controls, nothing to get out of adjustment, only one moving part under refrigeration.

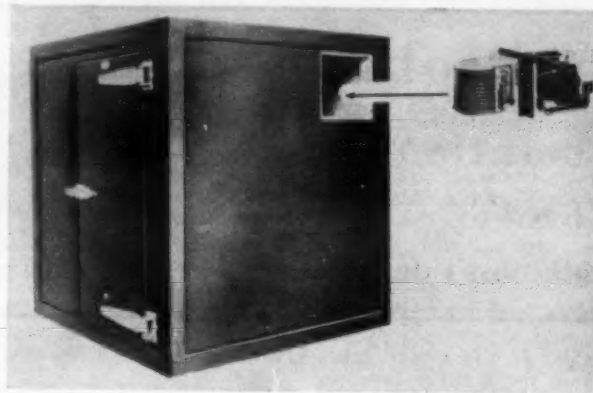
New features added this year include: completely sealed refrigeration system, continuous wound cast evaporator, safety cut-off in event of interrupted water supply or erratic refrigeration system, heavy duty self-aligning worm bearing eliminating periodic adjustments, and sealed insulation. Additional details are available on request.

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Filtrine MANUFACTURING CO. BROOKLYN 38 • N. Y.
"Water Coolers and Filters for 40 Years"



"THRIFTY COOLER" and the semi-hermetic condensing unit that powers it are shown above. The self-contained walk-in cooler can be put in operation by two men in from two to three hours, according to the company.

Sherer Introduces Self-Contained Walk-In

—KEY NO. C-352—

MARSHALL, Mich.—Sherer-Gillett Co. here has announced to its field organization the availability of a self-contained walk-in cooler.

Known as the model 63 "Thrifty-Cooler," the new addition to the Sherer line of refrigerated display and storage refrigerators has been produced "in order that Sherer distributors and dealers may be able to supply the need for a small cooler which can be installed with a minimum of expense," the company stated.

The new cooler is available in one size only—6 ft. 3 in. by 6 ft. 3 in. by 6 ft. 6 in. high.

"By concentrating on this one size only, production of the new model can be accomplished at the lowest possible unit cost and prompt shipments made from factory stocks,"

Sherer said. "Other coolers in standard sizes, as well as custom built models, are also produced by the company."

According to the company, erection of the Thrifty-Cooler is easily accomplished by two men, including placement of the plug assembly comprising the refrigeration coil and semi-hermetic condensing unit.

Shipped with valves open, it is only necessary for an electrician to connect to the power line and for connection to be made to the drain and the cooler is in operation. On the average the cooler is under refrigeration in from two to three hours, it is claimed.

Size of the cooler was developed after many individual sales were made for use in soft ice cream stands where it permits storage of five 10-gal. cans in a single row, or a total

of 25 cans, the company pointed out. "In addition to soft ice cream stands, the cooler is suited for small businesses of any kind."

"In the tavern, it will hold up to 68 cases of beer—or 18 half-kegs stacked two high. It can be equipped with meat rails and so is ideal for the small neighborhood grocery. It can provide the necessary refrigerated storage for the baker, the confectioner, or the smaller restaurant."

Literature fully illustrating the Thrifty-Cooler is available on request.

Screwdriver Resists Torque, Penetrating Force

—KEY NO. C-353—

ROCHESTER, N. Y.—Resistance to torque and penetrating force is said to be increased far beyond normal requirements

in Hold-E-Zee screwdrivers, manufactured by Upson Bros., Inc. here.

This increase in resistance to two of the most important reasons for screwdriver failure has been made possible by an entirely new blade-locking method.

The new method features a precision-molded hexagonal block of tough, harder plastic which drive-fits with extremely close tolerance into a hexagonal cavity in the transparent, insulating handle. This plastic insert, or "Lok-Blok," also contains a hexagonal cavity into which the screwdriver blade drive-fits.

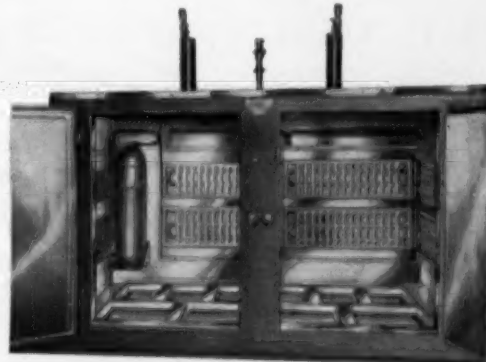


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Refrigeration Problems and their solution

by Paul Reed

For Service and Installation Engineers



Paul Reed

When Is A Motor Overloaded? (2)

In the discussion in the previous instalment, it became apparent that the horsepower of a motor is limited by its temperature. The horsepower ratings of most open-type motors are based on a temperature rise of 40° C. (72° F.) when operating continuously. Some motors are rated on a temperature rise of 50° C. (90° F.).

Some motors known as "short-hour" motors are rated on periods of operation of comparatively short duration, so that they do not have time to completely heat up as do continuously operated motors or motors operated for intervals of long duration, such as most refrigerating machine motors. Short-hour and intermittent duty motors can be given higher ratings than those operated continuously at full load.

HEAT DOES THE DAMAGE

Thus, it is the heat that may harm the motor rather than the electric

current directly. If the motor could be kept cool, it could carry tremendous loads.

It is heat that damages the materials of which the motor is made. Generally speaking, the insulation in the motor is the most susceptible to damage from heat—the insulation on the wire, and the fiber or other materials used for slot insulation, etc.

Some motors, particularly those having commutators, such as repulsion-induction motors and DC motors, may use soft solder in connecting the armature coils to the commutator segments, and this soft solder may melt, and we say the motor "throws solder."

As a rule, however, it is the insulation that first shows damage. Cotton, linen, silk, fiber, or similar materials "char"; that is, they break down and lose their insulating quality.

As mentioned in a previous instalment, two popular wires used for winding motors, particularly hermetic motors are "Formex" and "Formvar," which are insulated with a synthetic, vinyl acetal. It has been reported by Drs. Steinle of Germany, and Elsey of Westinghouse, that this insulation

begins to soften at about 160° C. (220° F.).

MOTOR TEMPERATURE NOT UNIFORM

It should not be supposed that a motor heats uniformly. Some parts of the motor, such as the outer frame and end-bells and even the ends of the field coils are to a greater or lesser extent exposed to room air, and, therefore, have a better opportunity to dissipate heat and keep somewhat cooler than the coils in the slots.

This may be particularly true of motors which have strong currents of air blowing over them, such as the motors on air-cooled condensing units. Also, some motors have small built-in fans attached to their rotors that circulate some air through the inner parts of the motors.

Well ventilated motors, whether by internal or external fans, can carry heavier loads and thus warrant higher horsepower ratings than unventilated motors.

A thermometer putted to the frame of a motor is not an accurate gauge of the maximum temperature inside the motor. However, it can be

used to determine if the motor exceeds the 40° C. (72° F.) rise above room temperature.

REFRIGERANT COOLED MOTORS

In many hermetic units, the cool suction gas is brought through the motor case before it reaches the compressor cylinders. In some designs, passages are provided in the field laminations and in the rotors, so that the cool suction gas can come into better contact with the hot inner parts of the motor.

It is not uncommon to find such motors carrying 60% greater loads than their nominal horsepower; that is, continuously overloaded 60% and yet staying even cooler than would be allowable by a 40° C. (72° F.) temperature rise above ambient (room) temperature.

The ability of such hermetic motors to stay cool depends critically upon the temperature of the suction gas. If it reaches the motor case cool, the motor can carry the heavy "overload" and still stay cool. If the suction gas reaches the motor warm, the motor may overheat.

EFFECT OF SUCTION SUPER-HEAT ON TEMPERATURE OF HERMETIC MOTORS

Therefore, on hermetic units, the superheating of the suction gas is a matter of importance to the motor as well as to the evaporator, compressor, and the condenser. In commercial hermetics using expansion valves, the superheat setting of the expansion should be such that the suction gas reaches the motor-compressor at the temperature which has been allowed for by the manufacturer of the motor compressor.

In commercial units, it is usually assumed that the suction gas will be at 65° when it arrives at the compressor, and the cooling of the hermetic motor can be based on a 65° gas.

In household or other self-contained units using capillary tubes, the superheat of the suction gas and consequently the temperature of the suction gas reaching the motor-compressor is determined by the amount of refrigerant charge.

Undercharge, possible partial stoppage of the capillary, or similar conditions may therefore cause motor overheating despite the fact that the unit is giving less useful refrigeration and doing less work than when running normally and at normal evaporator temperatures.

MECHANICAL OVERLOADS

The mechanical factors in motor loading should not be overlooked.

Bearing and shaft sizes provide certain maximum loading which, if exceeded, may cause excessive wear and possibly even seizure. Oil problems are increased by overloading.

The bearings must be for all practical purposes, perfectly lined up. The gap between the rotor and stator is highly critical, not only as to the amount of gap, but the rotor must be concentric with the field pole pieces, so that the gap is the same entirely around the rotor.

The rotor must be in its exact magnetic center. Ordinarily, this is checked when the motor or motor-compressor is assembled and some variation or "float" may be allowed so that the rotor can align itself magnetically.

TEMPERATURE, NOT WATTAGE, IS LIMITING FACTOR

From all of the preceding, it is apparent that the per cent of overload is really of little consequence if the motor stays cool. It is heat that may damage a motor and which therefore limits the amount of horsepower rating or per cent of overload above a nominal horsepower rating.

The amount of wattage or amperage drawn by a motor is an index of the amount of horsepower being developed and carried by the motor. The fact that the wattage or amperage is 15%, 25%, 40%, or 60% above that corresponding to the nominal rating of the motor merely indicates the amount of load beyond the nominal rating of the motor.

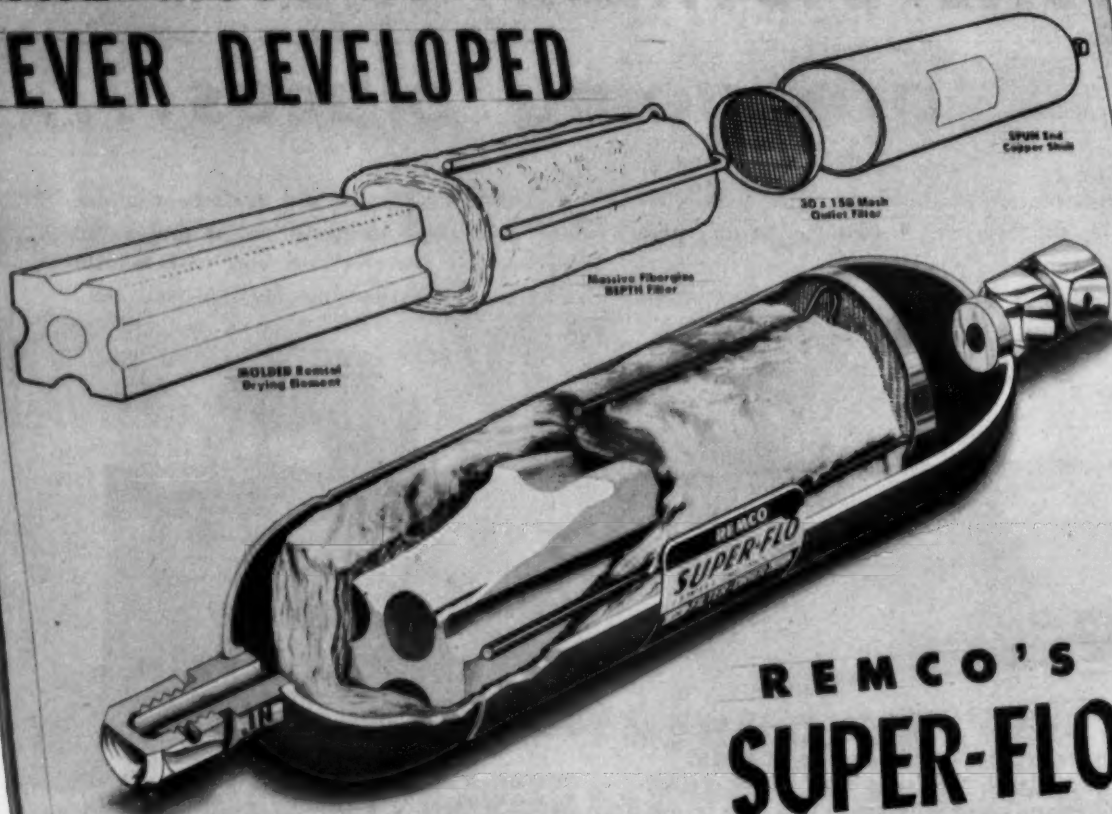
This should not be taken to mean that the nameplate rating of the motor can be disregarded. Far from it! To do so would be simply to court trouble.

It will be seen, however, that the wattage or amperage is only one factor in possible danger to the motor. Moreover, this discussion may serve to explain why some motors, apparently heavily overloaded by the equipment manufacturers, are in no actual danger, but instead continue to give dependable service.

WHEN A MOTOR IS OVERLOADED

Thus, to answer the question "When is a motor overloaded?" we can answer, "When it is drawing more electric current than its nameplate rating." However, that may not mean that the motor is overloaded to an extent that it is in danger, so we can add that "A motor is not dangerously overloaded until it becomes hot enough to damage any of the material of which it has been constructed."

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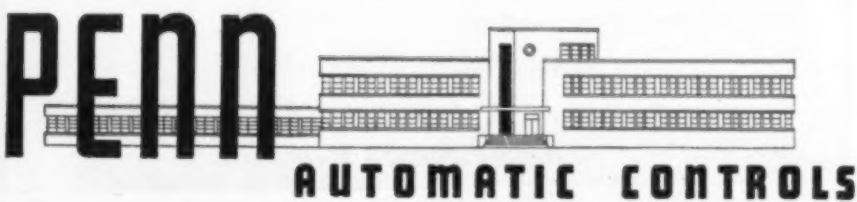


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Service & Supplies

Water Tube Soldering

5 Simple Rules for Servicemen To Follow When Joining Copper Tubing or Fittings

By John S. Coe, Manager of Products, Chase Brass & Copper Co.,
Subsidiary of Kennecott Copper Corp.

Copper water tube and fittings designed to provide proper tolerances may be easily joined using soft solders by following five simple rules. Pretinning is unnecessary because capillary action will draw molten solder between the tube end and the inner surfaces of the fitting to form perfect, water-tight joints. Here are the five simple rules:

5 RULES

1. Polish outer tube ends and inner surfaces of fittings.
2. Apply a suitable flux to these areas.
3. Apply heat and solder.
4. Remove residual solder and flux.
5. Let joint cool.

Tube ends should be cut square with a hacksaw having 24 or 32 teeth or by means of blade cutters which are available for diameters up to 3 in. A template of thin straight-edged metal or stiff paper is helpful as a line guide for saw-cuts in large diameter tube. Mitre tools are available for cutting copper water tube sizes up to 2 in. Burs are easily removed from inside and outside tube edges with a half-round file. The chamfering of these edges will make joining of tube and fitting easier in the larger sizes.

No. 00 steel wool or sand cloth may be used to polish the outer surfaces of tube ends and the inner surfaces of fittings before flux is spread on these areas.

The purpose of the flux is to assure chemically clean surfaces and to prevent oxidation when heat and solder are applied. Flux should be mildly corrosive for cleaning metal surfaces but this action should cease during the soldering process. Because of this, a flux that is recommended for use without precleaning the copper surfaces should be avoided because it may continue to be corrosive after soldering is completed. A flux best suited for copper consists of zinc and ammonium chlorides prepared with petrolatum in convenient paste form.

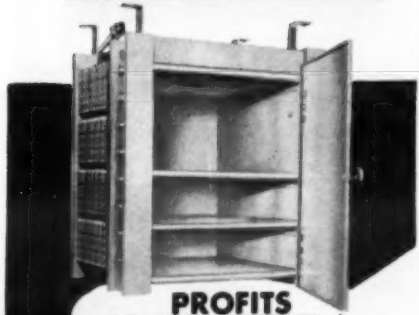
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BLOW TORCH can be used for soldering copper water pipe and fittings in the smaller sizes.

SOFT SOLDER ADEQUATE IF TEMP. IS UNDER 250°, PRESSURE'S NOT GREAT

Soft solder is adequate for joints in water lines where temperatures do not exceed 250° F. and there are no excessive pressures or stresses. Types of solders that may be used include 50/50 tin-lead, 95/5 tin-antimony, or other tin-lead alloys.

Heat may be applied to the joint by means of a gasoline blow torch or air-gas torch of suitable size. If a torch is used, wire solder should be applied as the flame is moved away from the joint. At the right temperature solder will melt and can be flowed into the joint until it is filled. Care should be taken to avoid overheating the joint and consequent burning of the flux. Solder will not enter the joint, and its surfaces will have to be recleaned should this occur.

SOLDER FITTINGS MORE THAN 2 IN. IN DIAMETER

The soldering of fittings that are more than 2 in. in diameter may be done by heating with one or more torches but greater care is required to prevent spot overheating, particularly if more than one heat source is applied. If the flame is moved uniformly over the entire area of the fitting until a point just below the melting point of the solder is reached, large fittings can be conveniently soldered by reapplication of heat to limited areas.

By applying the flame over an arc of approximately 2 or 3 in., wire solder can be tested for temperature and then flowed into the joint to form a soldered section. By repeating this step-process, overlapping sections can be made until the entire joint has been filled with solder.

When joints exceed 4 in. in diameter, heat is rapidly dissipated so that best results may be had through the use of an oxy-acetylene torch with a medium-sized tip. For smaller sizes of copper water tube, gasoline, butane, propane or air-acetylene torches, or "thermo grip" electrical units may be used.

Surplus solder and flux may be removed with a rag or brush to improve the appearance of good workmanship. Then the joint should be allowed to cool.

Hard solders are those that have melting points above 600° F. Many of these have melting points of more than 1,100° F. and, depending on their composition, are identified as silver solders or low temperature brazing alloys. High silver content solders provide desirable properties for soldering copper water tube and fittings including flow, joint penetration, and high strength but they are relatively expensive. Alloys that meet the requirements but are less expensive include "Sil-fos," "Easy-flo," "Phos-copper," and "Phosco," which are proprietary products.

These proprietary alloys may be used as solders without flux, provided that tube and fitting surfaces are clean. If flux is used, they will "wet" tube and fitting surfaces and assure better flow and penetration of the joint.

Although there are a number of excellent prepared fluxes available, a satisfactory flux consists of a mixture of powdered borax and alcohol or water that forms a thin milky solution. It may be painted on to provide a thin film for good hard soldering. Care should be taken to control the amount of flux so that it will not "load up" and cause uneven distribution of solder. Excessive amounts of flux tend to fillet and cause faulty joints.

Hard solders do not penetrate the full depth of joints as readily as soft solders but because of their physical

strength nominal penetration of $\frac{1}{8}$ in. or so is usually adequate. The high temperatures required to flow hard solders also tend to anneal the tube at or near the joint so that a well-filleted point has greater strength than the annealed tube at this point.

Blow torches and air-gas torches are suitable for hard-solder joints up to 1 in. in diameter but oxy-acetylene flames are recommended for larger sizes. The flame should be moved over the entire joint until it is uniformly heated to a dull red if fittings are on 1 in. diameter or less.

Preheating of all joint and adjacent fitting surfaces is good practice for larger fittings, after which about 2 in. or so of the joint circumference should be heated to a dull red. High temperature oxy-acetylene flames should be kept moving a slight distance from the joint to prevent

spot melting while hard solder wire is applied.

Underheating tends to "ball" or load up solder and cause inadequately "wetted" surfaces. Excessive heating may cause cracking in cast alloy fittings or effect a surface condition so that solder flow and adherence is unsatisfactory.

Low flame pressures are recommended to prevent wasteful spreading of the solder. Good penetration of the joint is aided by moving the flame back over the area toward fitting shoulders. A fillet may then be formed at the fitting edge when solder ceases to flow into the joint. Then the joint should be allowed to cool.

Wrought copper fittings may be chilled rather quickly but cast brass fittings should cool slowly in air to reduce thermal stresses.

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Air Conditioning & The Builder (4)

What Can Be Done In Residence Design and Construction
Details To Hold Down Cooling Unit Size, Operating Costs

By John A. Gilbreath, Servel, Inc.

The men who have preceded me on this discussion panel have discussed the subject of air conditioning from the point of view of the producer, or the installer, or the user.

Each one went into careful detail with respect to one important phase of the subject, and by defining those things which represent good product design, good installation practice, and good user results, they have indirectly spelled out the responsibility of those who design, produce, and install air conditioning systems.

The topic assigned me is "How Much," which, as a title, is meaningless, but which covers, for purposes of this meeting, those structural conditions which affect most directly and most importantly the required size and the operating cost of an air conditioning system in any residence.

Thus, attention to them becomes the responsibility of those who design and erect the houses. Since they have vital effect upon air conditioning investment cost, operating cost, and user satisfaction, their importance is obvious.

An air conditioned residence is nothing more than an envelope containing air which is treated by an air conditioning machine. Heat flows through this envelope in winter, from the inside out, and that which does flow out must be replaced in order to keep the structure warm.

Conversely, in summer, heat flows from the outside in, and that which flows in must be removed from the air if the structure is to be kept cool inside.

Our objective should be to reduce the rate of heat flow to a practical minimum, both summer and winter, in order to reduce equipment requirements and energy requirements. Let us concern ourselves with the quality of that envelope as a device for retarding heat flow.

Now, the rudiments of winter heating are well known. However, there are three important facts which it might be well to touch upon.

First, the investment cost of equipment required to cool a structure in summer is equal to, or perhaps greater than, the cost of equipment required to heat that structure in winter.

Second, heat from the sun, from lights and other internal heat producing devices, and even from people themselves, all add warmth to the structure and help ease demands on the heating system in winter. However, these same factors add to the demands imposed upon a cooling system in summer.

Third, those things which tend to reduce the flow of heat inward in summer also reduce the flow of heat outward in winter. Therefore, measures which reduce the cooling load almost invariably reduce the heating

load too, which gives us double barrel effect in cost savings.

So, by doing what we can to hold summer heat flow into the house to a practical minimum, we are also helping hold equipment cost and operating cost to a minimum in winter as well as summer.

Heat from the sun is usually the most important single factor in determining cooling equipment needs for a residence, and it also has an important bearing on operating costs.

Sun heat is most intense and most significant as a factor in cooling loads between the hours of noon and five o'clock in the afternoon. It penetrates windows and other glass areas more quickly and in greater volume than it does through the masonry or wood construction of walls and roofs. Dark surfaces absorb and transmit more sun heat than light colored ones, which have reflective value.

Insulation, in attic spaces particularly, greatly reduces the amount of sun heat transmitted to the inside of the house. Rough textured surfaces absorb more heat than smooth ones.

Cooling loads can often be reduced by careful placement of the house on the building lot. Turning the smallest wall area toward the west reduces the exposure, and the load. A garage located on the west side of the house will shield the house proper from sun effect and reduce cooling loads.



At the National Association of Home Builders convention, a presentation of year-round residential air conditioning systems was prepared under the auspices of the Air Conditioning & Refrigerating Machinery Association, with various aspects of the subjects of the subject discussed by A.E. Meling, Carrier Corp.; S. J. Levine, General Electric Co.; Keith T. Davis, Bryant Div. of Affiliated Gas Equipment Co.; and J. A. Gilbreath, Servel, Inc.

Because this presentation offered so much good information about the fundamentals of year-

round residential air conditioning—what it is and how it works, and what builders can do in terms of changing new home design to lower building costs, the NEWS is publishing the discussions. Previous installments were published in the March 2, March 16, and March 23 issues.

Discussion in this issue by J. A. Gilbreath centers on the kind of structural and design detail alterations that can be made in new home construction, or existing home renovation, to make possible lower first costs and operating costs for residential jobs.

well within the average family budget.

It is the function of the conditioner to add or remove the heat required for comfort. Whether the amount of heat to be added or removed is little or much depends largely upon the thought and care which goes into planning and construction of the house itself—in other words, the quality of the "envelope." Yet, the amount of heat to be added or removed determines the first cost and operating costs of air conditioning.

Use a minimum of glass in west walls, and where it is essential, provide outside shading for the glass area in the form of trees, awnings, jalousies, or sun screens. Inside shades and ventian blinds are less effective, for the heat is already inside before they begin their work. A great deal can be done to reduce summer loads by proper landscaping, or by taking advantage of existing foliage. Trees which shade the west and south walls are very helpful. If they are the type which shed their leaves, so much the better, for they let winter sun through to help warm the house. Evergreens on the north side will reduce the chilling effect of winter winds.

Roof overhangs are of great benefit as a shading device, particularly on the southern exposure. Width of overhang required for greatest effectiveness can be accurately calculated for every latitude.

Large window areas are very desirable in modern homes. For most economical heating and cooling they should be double glazed. Double glazing reduces heat transfer by 60%. A large percentage of the total glass area can be of the fixed sash type, since it is not necessary to provide for cross ventilation.

Attic insulation is considered a must in modern housing for good heating practice. It is also a must for good cooling practice.

Natural attic ventilation, and vapor barriers as they presently conform to good building practice, will reduce air conditioning loads.

Consideration of these various factors will result in a high quality "envelope," which will minimize heat travel, summer and winter. The interesting thing about most of them is that they make a house more attractive and more salable, so they have useful purpose beyond function.

Let's look at a home designed for air conditioning being built currently by our moderator, Dick Hughes, the Texas builder. It has just about 1,000 sq. ft. of floor space and consists of living-dining area, kitchen, two bedrooms, den (or third bedroom), bath, carport, and large storage areas.

It has a roof overhang, high windows, carport on the end of the house, and white marble roof, all of which made it more attractive, and yet makes air conditioning more economical.

The overhang shades the south windows completely, as shown in the upper elevation. However, if this house were completely reversed on the lot, the effect would be the same, since the overhang and high window construction apply to the opposite side also. It doesn't matter which side of this house faces south.

Similarly, the west wall is without windows, thus reducing heating and cooling loads—but, with the carport on the east, it can also be reversed end for end, and still no sun will reach a window. This design gives maximum flexibility in orientation, without penalty.

The equipment room is located near the center of the house for shortest and most economical duct runs.

Based upon cooling this house to 80° F. on a 95° day outside, and assuming occupancy by a family of five, with one complete air change per hour for ventilation, 1.78 tons of cooling capacity is required.

To heat it in winter from 0° outside to 70° inside requires 65,000 B.t.u./hr. This house can be air conditioned for a modest investment in equipment, and with operating costs

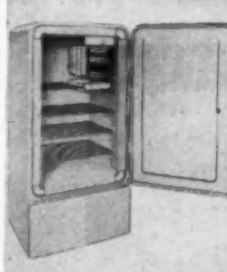


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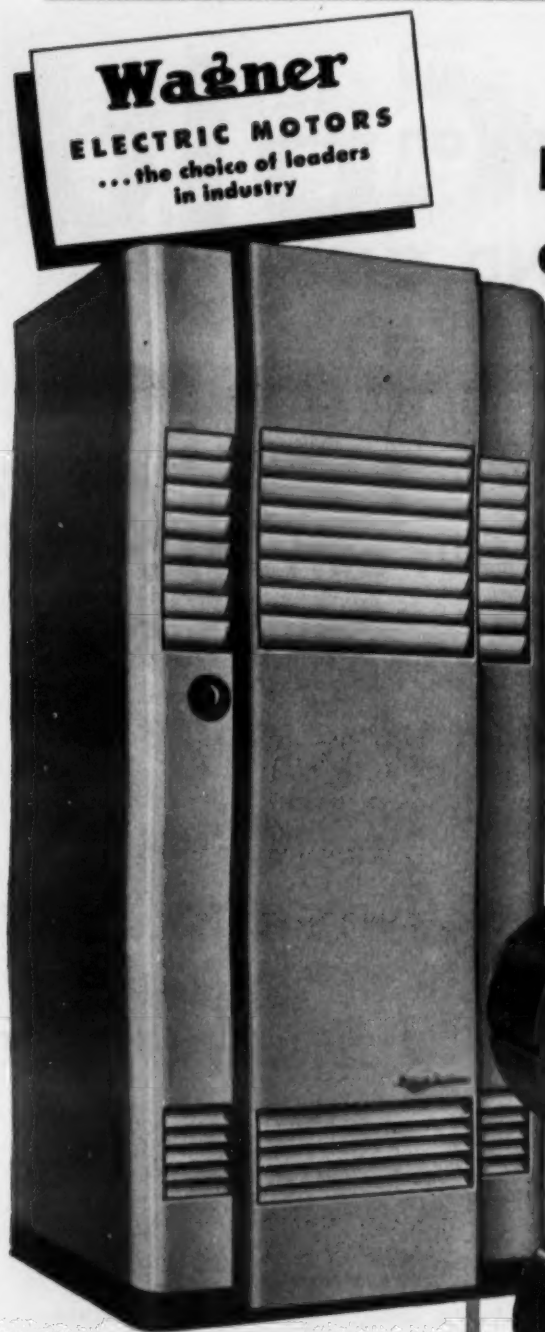
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Wagner Hermetic Motor of the type used in self-contained air conditioners. This 7 1/2 horsepower polyphase squirrel-cage motor is especially designed for use in sealed refrigeration units.

This 3/4 hp single-phase, capacitor-start Wagner Hermetic Motor is the type used in hermetically-sealed refrigerating units like the one shown at right.

This compact, self-contained air conditioning unit, that may be located in or out of the air conditioned space, is typical of many such units powered by Wagner Hermetic Motors.

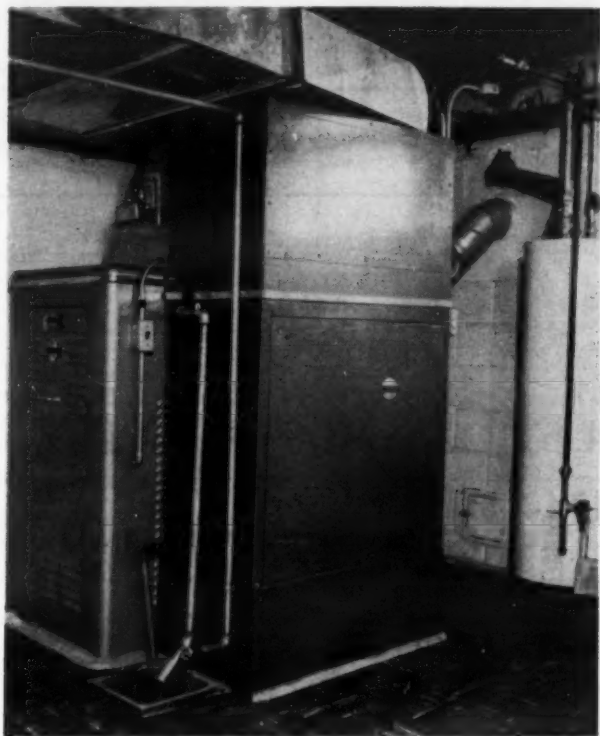
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TUCKED IN the corner of the basement is a 2 or 3-ton Airtemp combination residential air conditioner and gas furnace. Equipment is optional in \$15,900 to \$18,500 homes in a 96-unit development in Oak Park, Mich. near Detroit.

Air Conditioned Homes--

(Concluded from Page 1, Column 2) built, are being offered as optional equipment on the homes, which the builders, Kopman and Hassin, are constructing "with the idea that they are to furnish year-round systems."

The "prototype" home which is open for public inspection has been air conditioned. It is located at 24200 Oneida, in Oak Park. Homes in the are priced from \$15,900 to \$18,500.

The air supply system is of the high-wall and low-wall register type, and therefore especially suited for year-round air conditioning. The Airtemp heating and cooling system is tucked away in a corner of the basement utility room. Gas is the fuel.

Sees Trend In So. Calif. To Tract Housing Cooling

LONG BEACH, Calif. — Building contractors are being urged to install air conditioning equipment in low-cost tract housing, according to V. C. Redman, Pacific Gas & Electric Co. executive.

Redman, who is also chairman of the business development section of the Pacific Coast Electrical Association, predicted that many such installations would be made this year in southern California.

Here to attend a PCEA meeting, Redman noted that summer heat waves in many areas of California make an excellent market.

"We are currently attempting to sell contractors on the idea that such air conditioning units can be placed back-to-back with a forced-air gas furnace for a compact heating-cooling installation. The price installed, with ducts, would be about \$1,250 to the contractor."

Appliance Outlook--

(Concluded from Page 1, Column 5)

try sold 10,000,000 units at a retail value of \$2,750,000,000. Thus, in just five years we predict a growth of over 30% in units, but almost 50% increase in dollars at today's prices.

"The dollar increase is greatest because of the demand for larger models and because some of the new automatic products have higher selling prices."

Ashbaugh noted that refrigerators, which account for the largest volume in the industry, have reached a saturation of 86%. Nevertheless, he said, more than 3,500,000 were sold last year at a retail value well in excess of \$1,000,000,000.

He stated that the replacement market and new customers created by family growth will require at least that same volume for several years. Dollar volume will continue to rise because of the popularity of larger units and unit volume will level off at around 4,000,000 units, he thinks.

As other appliances approach saturation, the industry will develop new products to take up the slack, he pointed out.

Ashbaugh urged banks to cooperate with the industry so it can reach the sales goals forecast for the coming years.

"The electric appliance business, and with it the financing business, has a tremendous opportunity to contribute to the continuance of prosperity," he asserted.

"We are building our new factories for the growth of our business, and we expect that our investment will prove profitable. By participating in the financing of this appliance business, including inventory and consumer financing, we feel you also have an opportunity for growth and profit."

TRACKED FLOORS

SELL NO MILK!

You'll never hold present customers if your delivery men drip, drip, drip their way into homes and stores with deliveries. And you won't land new accounts unless your men appear in clean, sanitary uniforms. Eliminate messy ice and costly dry ice by putting DOLE Holdover Truck Plates in your delivery units.

DOLE Truck Plates are clean and sanitary . . . keep milk fresh and sweet as when it left your cooling room . . . are easily installed in any insulated body . . . and cost but pennies a day to operate.

For complete information ask for Catalog A-10.

DOLE REFRIGERATING COMPANY
5910 N. PULASKI RD.
CHICAGO 30, ILLINOIS
103 Park Ave., New York 17
In Canada: Dole Refrigerating Products Limited,
44 Elgin Street, Brantford, Ontario.

THE MASTER SERVICE MANUALS - - -

— — — and other books of the Refrigeration Library are depended upon as textbooks in trade schools from coast to coast.

BUSINESS NEWS PUBLISHING CO., DETROIT

Bending's much easier

WHEN YOU WORK WITH
REVERE
DRYSEAL
REFRIGERATION TUBE

Truly, it's no effort at all to bend dead-soft Dryseal. No tools are needed, just bend it by hand. And the special temper of the copper used, and its ductility, are the reasons Dryseal will not split when flared for compression fittings. Another thing you'll like about Dryseal are the special, precise, mechanical, double-crimped ends. This double crimping is the last step in the manufacture of Dryseal, and assures you of receiving a bone-dry, dirt-free tube.

The seal is made in such a way that it does not change the diameter of the tube. This makes it possible to pass the tube through any opening large enough for the tube itself. Economical tube sizes range from 1/8" to 3/4" O.D.

And, for your greater convenience, Dryseal is packed in a nifty-50 one-coil carton. This carton, which has been attractively designed for easy identification in stock, contains one 50-foot coil of Dryseal . . . is easier to handle, light weight, economical and is sturdily made to assure protection of the tube.

IN THE EASY-TO-HANDLE
NIFTY-FIFTY...ONE COIL CARTON

REVERE
COPPER AND BRASS INCORPORATED
Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.; Sales Offices in Principal Cities, Distributors Everywhere
SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY

LOOK AHEAD

1 YEAR
5 YEARS
10 YEARS

— and you'll buy **VICTOR** today!

...Send for details of this Victor Dehumidifier and other items in the Victor line that mean More Sales...More Profitable Sales for You

VICTOR
VICTOR PRODUCTS CORPORATION
HAGERSTOWN, MARYLAND
MANUFACTURERS OF THE FAMOUS VICTOR QUICKFREEZERS

You can sell air conditioning best through the men who know air conditioning best

APRIL 13 IS A BIG DATE FOR THE INDUSTRY'S MOST EXPERIENCED AIR CONDITIONING MEN!

APRIL 13 Is the 1953 Air Conditioning Marketing Issue of the industry's *only* newspaper.

APRIL 13 Is the date when advertisers can be sure of top interest and buying action.

APRIL 13 Is the time to bear down on the selling points of your air conditioning products —
room air conditioners, package air conditioners, year-round residential, cooling towers, diffusers, controls—
all air conditioning products.

APRIL 13 Is the moment to put your advertising message forcefully before the men who can and will do the top selling job.

**APRIL 13
IS CLOSE**

**Forms Close
April 3**

**Order King-Size Advertising Now in the
AIR CONDITIONING MARKETING ISSUE
OF**

The Newspaper of the Industry Since 1926

**AIR CONDITIONING &
REFRIGERATION *News***

450 WEST FORT ST., DETROIT 26, MICH.

Chicago Office: 134 S. LaSalle St., Chicago 3, Ill. - **New York Office:** 521 Fifth Ave., New York, 17, N.Y.

Ga. Carrier Dealers Use Project as 'Classroom'

ATLANTA — Georgia Carrier air conditioning dealers attended a three-day session on new equipment in Atlanta recently.

Part of their training session included a trip to the city's first air conditioned housing project to get first hand information as to how the 1953 year-round unit could be used in actual practice.

Opening of the project's model home to the public took place March 15.

The project will include 82 homes in the \$16,000 class.

Lewis Barnes, president of Atlanta Corp., Carrier distributors, was ban-

quet speaker at the concluding session.

Represented at the dealers' school were Atlanta Air Conditioning & Heating Co., Wellborn Heating Co., and Delta Heating Co., of Atlanta; L. M. Leathers' Sons, Athens; L. B. Roberts Electric Co., Dublin; M & Y Refrigeration Co., Elberton; Lee Refrigeration & Electric Co., Fort Valley; Copeland Co., Griffin; Central Electric Co., Rome; Lanthier Machine Works, Winder; B & W Electric Co., Jackson; Bailey Tire Co., Sanderville; John M. Parker Electric & Plumbing Co., Milledgeville; and C. T. Young, Covington.

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" \$5.00 per insertion. Limit 50 words. 10¢ per word over 50.

RATES for all other classifications \$7.50 per insertion. Limit 50 words. 15¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other addresses by actual word count. Please send payment with order.

POSITIONS WANTED

SALES MANAGER having extensive experience with leading manufacturers in the commercial refrigeration, air conditioning and heating industries will be open for position after April first. National acquaintance with distributors, jobbers and manufacturers agents. Very aggressive. Right age. Large and small corporation experience. Free to travel and relocate. BOX 4267, Air Conditioning & Refrigeration News.

REFRIGERATION SALES and service. Three years sales and twelve years servicing. Industrial and commercial service experience with three years sales of refrigerated fixtures and air conditioning. Two years manufacturers' service experience. Two years university plus technical refrigeration engineering. Desire position with some incentive. Chicago Area. BOX 4275, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

AIR CONDITIONING engineer. Well established Carrier distributor needs young, ambitious engineer for location in Orlando, Florida. Write full details first letter giving experience, education and salary expected. Will be held confidential. FLORIDA WEATHERMAKERS, INC., 1538 Hendricks Avenue, Jacksonville, Florida.

DISTRICT SALES supervisor wanted. We can offer an experienced commercial refrigeration sales supervisor an attractive proposition in the midwest territory with headquarters to be in Chicago or immediately vicinity. Primary job would be selection of new distributors and working with those already established. The ability to help distributors select and train new salesmen, actually showing them how to close a sale, would be an important asset to the man we want. If selected and you prove yourself, the way is open for earnings in excess of industry average for similar work. BOX 4246, Air Conditioning & Refrigeration News.

MANUFACTURERS AGENTS For well-known Flake Ice Machine. Good proposition for the right men. Calling on Refrigeration Contractors. Territory, Midwestern and South-eastern states. Write BOX 4247, Air Conditioning & Refrigeration News.

EXPERIENCED SERVICEMAN wanted with own tools and car. Steady year-round work. Opportunity for advancement with established Detroit refrigeration and air conditioning contractor. BOX 4276, Air Conditioning & Refrigeration News.

SALES REPRESENTATIVE preferably with engineering training, wanted for aggressive northern Ohio wholesaler, to sell supplies and equipment. Salary, bonus and expenses commensurate with ability. Give resume of schooling, employment and earnings. Write BOX 4279, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

18 FRIGIDAIRE Model C compressors modernized and overhauled in 1950. 1 1/2 HP, 220 V, 3 phase, 60 cycle. 1 Frigidaire model W-375 compressor, 1/2 HP, 110/220 V, 1 phase, 60 cycle. 2 Frigidaire model FWLC cases, with 1/2 HP compressors, 110 V, 1 phase, 60 cyc. HERSHEY ESTATES, Hershey, Pa., Hershey 274.

SALES MANAGER

Nationally known manufacturer of commercial refrigeration equipment seeking qualified man as San Francisco branch manager. Must have record of experience and success in sales in this field—wholesale and especially retail.

Excellent opportunity for energetic, capable man looking for a real future. Send resume to:

BOX 4273, AIR CONDITIONING & REFRIGERATION NEWS

(All Replies Held Confidential)

Evaporative Condensers

Their Selection, Installation, Maintenance

By John Engalitchoff, Jr., President, Baltimore Aircoil Co., Inc.

The way in which the evaporative condensers are connected is one of the most important factors influencing the satisfactory performance of equipment and the system as a whole. Sometimes, if piping is not carried in the proper manner, it may not only jeopardize the safety of equipment but could also jeopardize the safety of operating personnel.

There is no simple way to describe the "Do's" and "Don'ts" of refrigeration piping—consequently we have attempted, in Fig. 11 to 14, to show the major "Do's" and "Don'ts" of the basic high side as related to refrigeration piping and the component parts of the system.

It must be remembered that the diagrams are schematic only. Also, it is impossible to cover all the "Do's" and "Don'ts". However, we have tried to cover the basic principles, show the most frequent mistakes, and answer questions which have come up or which we have encountered in our experience.

If any variations from the diagrams shown should come up, we believe that by studying the diagrams one could determine which is the right or wrong way.

As mentioned before, the diagrams are only schematic and there is no attempt made to give details nor exactness. Consequently, when designing the system, the piping should be sized to the best commercial practice.

The lines should be laid out so they will have a certain amount of flexibility between different pieces of equipment, allowing for vibration, expansion, and contraction. Never lay out piping so it is rigid.

Figs. 11 and 12 present relatively pertinent points of the "wrong" and the "right" way of connecting up a single compressor—single condenser installation.

The following things are listed as "wrong" in Fig. 11:

1. There is no surge drum or oil separator provided in the hot gas discharge line from the compressor.
2. A purge valve is lacking on the high point of the system high side.
3. Liquid drip line is carried horizontally right at the condenser and the liquid line is reduced at the condenser.
4. The liquid line shut-off valve is located in a horizontal run and its stem is in the vertical position.
5. The equalizing connection has been capped.

In contrast, the following are listed as "right" in Fig. 12:

1. Installation of a combination surge drum-oil separator, while not absolutely necessary on a simple system, is highly recommended. When installed, it should be as close to the compressor as possible.
2. A purge valve has been provided at the high point of the system. If automatic purger is used, connect to the high point of system. If operation of system causes an excessive accumulation of non-condensibles, use a non-condensable accumulator (see 2-A in Fig. 12).
3. Ell down the liquid drip line at the condenser. Do not trap liquid drip line. If possible, do not reduce liquid drip line. If reduction is necessary, reduce after the ell.
4. Place liquid drip valves in vertical lines if possible. If necessary to have valves in horizontal lines, place stems in horizontal position.
5. Connect equalizing line as shown in Fig. 12. If this is not done, install valves (5-A) on condenser and (5-B) on receiver. Should "gas binding" of receiver occur, equalizing connection may be installed without breaking into system.

(To Be Continued)

Buffalo Firms File Names

BUFFALO—A business name has been filed in the Erie county clerk's office for the Horbett & Hartman Furnace & Appliance Sales, 1047 Clinton St., Buffalo, by William Hartman and George Horbett.

A business name also has been filed for Stephens Electric & Refrigeration Co., 30 Baxter St., Buffalo, by Stephen William Korka.

FIG. 11 shows schematically errors to be avoided in piping a single compressor—single evaporative condenser system. Numerals refer to the text.

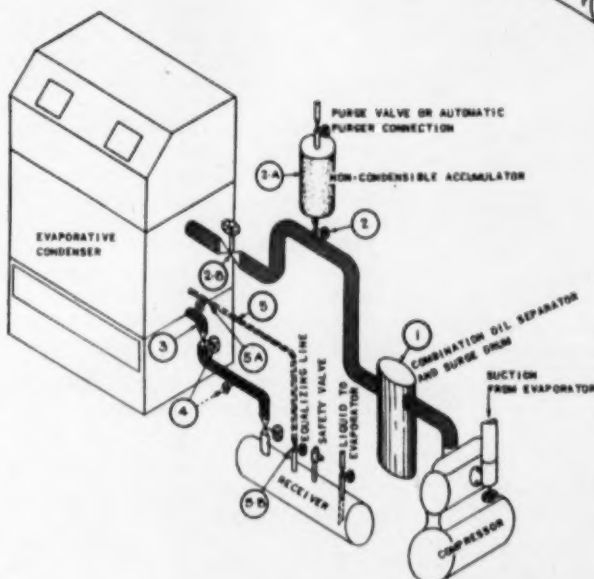
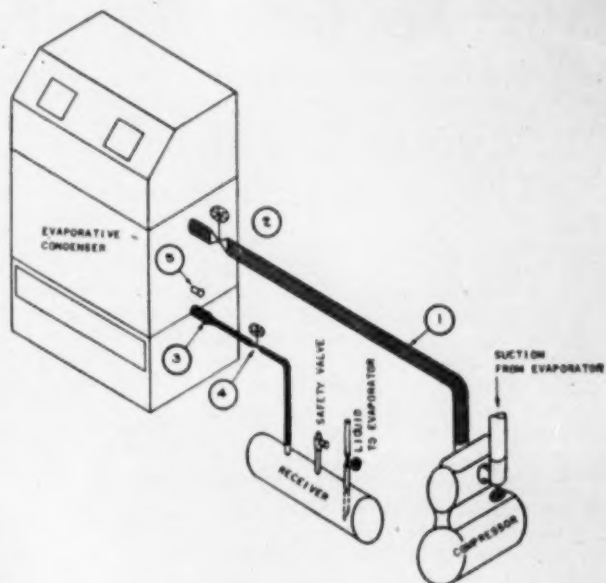
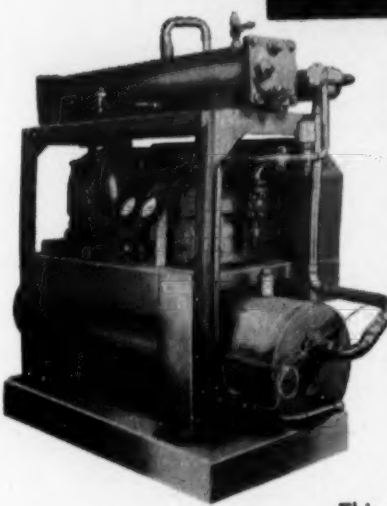


FIG. 12 shows schematically the correct way to pipe a single compressor—single evaporative condenser system. Numerals refer to the text.

READY FOR WORK— the new Baker



Packaged Liquid Chiller

This complete all-in-one unit is engineered to give you a superior liquid chiller in one compact assembly. It does away with extra installation costs because all assembling, refrigerant piping, wiring, evacuating, dehydrating, testing and charging are done at the factory.

Delivered ready to go to work, the NEW BAKER PACKAGED LIQUID CHILLER is built in sizes from 10 to 60 HP giving water cooling capacities of 22 GPM to 160 GPM through a 10° cooling range. If necessary to meet special requirements, complete liquid chiller units can be shipped knocked down and ready for assembly on the job.

HERE'S THE PACKAGE

Compressor, condenser, insulated dry expansion chiller, heat exchanger and motor, with accessory equipment including dual pressure control, liquid line solenoid and strainer, fusible plug or relief valve, safety thermostat and gauge board assembly. It's all there—complete!

HERE'S WHERE IT WORKS

The LIQUID CHILLER can be used to cool circulating drinking water, water for residential or commercial air conditioning, process water and other coolants for machine tools, plastics, bakeries, chemical processing, rubber compounding and countless other manufacturing applications.

A half century of refrigeration pioneering and a complete distributor service is your assurance that when you choose Baker you choose satisfaction. (Baker compressors still running after 40 years' service are not exceptional.)

Consult your telephone classified pages for your local Baker representative. Get the full story of what this new liquid chiller will do for you.

BAKER REFRIGERATION CORPORATION
South Windham, Maine
Offices in Principal Cities

Detroit Auto Cooling License Proposal--

(Concluded from Page 1, Column 4) groups to see if they can iron out their differences and agree on an amendment to the ordinance as it is now written.

Unless they can, Drogosch told them, he will have to report their disagreement to the commissioner of the department, who may or may not submit the proposed amendment to the city council for adoption.

If the code is not amended, the automobile manufacturers will be required to have refrigeration contractor licenses to install air conditioning in their cars and the city will have to make inspections.

Karl M. Richards, manager of the field services department of the AMA, argues that the Detroit code, which includes the ASA B9 refrigeration code, was "developed to cover building installations and was never intended to be applicable to motor vehicle installations. . . . Thus motor vehicle installations should be excluded.

"Since air conditioning equipment is an integral part of the motor vehicle and because motor vehicles are ambulatory in nature and have no fixed permanent situs, it naturally falls within the regulatory authority now exercised by state motor vehicle administrative authorities in the same manner as brakes, safety glass, lighting equipment, and other parts and accessories.

AUTO SPOKESMAN OUTLINES STEPS ALREADY TAKEN

"To carry out this objective the following steps have been taken:

"1. Proper control of this type of equipment is now under consideration by the committee on engineering and vehicle inspection of the American Association of Motor Vehicle Administrators.

"2. The Society of Automotive Engineers has appointed a special committee to develop a recommended practice for design and installation of air conditioning and refrigeration units in motor vehicles. (Bruce G. Booth of General Motors Corp. declared that the SAE has already adopted and published this recommended practice).

"3. The National Committee on Uniform Traffic Laws and Ordinances has recently appointed a special committee, comprising state and federal motor vehicle officials, motor vehicle industry representatives, refrigeration industry representatives, and representatives from automobile

clubs, insurance companies, motor bus operators, and motor vehicle dealers to study this problem and make recommendations for an additional section to Act V of the Uniform Code to govern air conditioning and refrigeration installations in motor vehicles."

Both Richards and Booth stated emphatically that they were opposed to any sort of license covering installation and servicing of automobile air conditioners at the local level. They considered it an extra burden, inconvenience, and expense and contributed nothing to the public safety.

"Whatever is in the interest of public safety, we are going to do anyway, said Richards, "and we will do it on the national and state level so that all automobile owners and dealers will be protected, whether they are in the city, in the suburbs, or out in the country.

"At present no problem exists. We have heard of no instance anywhere in the country where public safety has in any way been endangered by automobile air conditioning.

"But we have already put into operation the machinery necessary to take care of public safety problems. If we feel that more needs to be done, we will do it."

CONTRACTORS SEE FUTURE PROBLEMS ARISING

A delegation of refrigeration contractors headed by George Murphree, president of the Refrigeration and Air Conditioning Contractors Association of Detroit, argued that letting the automotive industry out from under the code would only open the door to other groups.

They cited the heating contractors as wanting to install packaged residential air conditioning without a refrigeration contractor's license.

Mike Maksym, a local contractor, pointed up another danger. The automobile mechanic who has been trained to work on automobile air conditioning only will begin to feel capable of working on other air conditioning jobs.

Maksym said he thought that the dealer's mechanic who was going to work on air conditioning equipment should have a contractor's license.

"Do you think the mechanic should have a refrigeration license to clean spark plugs?" Booth shot at him.

"No. Of course not."

"Well, you have to disconnect the refrigeration line to do it" Booth retorted.

"In that case," Maksym asserted, "maybe we better get together with your designers and change the design. That's just bad designing when you have to take apart the refrigeration unit to service the car."

"The automobile industry does not need anybody else to help them design their cars," snorted Booth.

John M. Winslow, another refrigeration contractor, suggested as a compromise that a special category could be set up for installing and servicing automobile air conditioning and the holder of the license would be limited to work on automotive air conditioning only.



Government Contracts

DEPARTMENT OF DEFENSE

Description	Quantity	Invitation No.	Opening Date
Transportation Corps., New York Port of Embarkation, Brooklyn, New York			
Replacement of burner and controls on six boiler central heating plant.	Job	(ENG-30-182-TC-53-40B)	27 Mar 53
Contracting Officer, Local Purchasing Branch WCUR WADC, Wright-Patterson Air Force Base, Ohio			
Invitation for Bid /B/ and Requests for Proposal /Q/ are distributed to firms listed in the Bidders List maintained by the above activity. A complete bid set is available for EXAMINATION ONLY by prospective bidders at the Air Regional Offices located in the local trading area of the above activity.			
For furnishing and installing Job		RD-53-1476	30 Mar 53
Refrigeration System in the Turret Altitude Chamber, Building 22, of the Armament Laboratory in accordance with Drawing No. ARM 1619 and the requirements.			
Commanding Officer, Naval Supply Depot, Mechanicsburg, Pa.			
Attn: Code 178B			
Thermometers, dial and industrial, various ranges and sizes, to be mfgd. in accordance with various commercial and gov't. specs.	2736 ea.	73-29428B	27 Apr 53
District Public Works Office, Sixth Naval District, Naval Base, Charleston, S. C.			
Rehabilitation of heating systems, amercd-Parris Island, S. C.	1	36972-B	9 Apr 53
Officer in Charge of Construction, U. S. Naval Station, New Orleans, Louisiana			
Air conditioning of Building	Job	35423	14 Apr 53
H-8 Naval Hospital, Corpus Christi, Texas.			
District Public Works Office, Eleventh Naval District, San Diego, California			
Install steam heating in Bldgs. numbers 134, 135 and 136, Naval Hospital, San Diego, California.	Job	37431	16 Apr 53
Purchasing and Contracting, Bolling Air Force Base, Washington 25, D. C.			
Furnish all plant, labor, materials, equipment and appliances and in performing all operations complete, including heating, ventilation and electrical work for alterations to Base Chapel at Bolling Air Force Base in accordance with specifications and BAFB drawing No. C-1876-53 sheets 1 and 2.	Job	(49-604-53-67)	30 Mar 53

GENERAL SERVICES ADMINISTRATION

Description	Quantity	Reference No.	App. Bid Date
Business Service Center, General Services Administration, Region 5, 219 S. Clark St., Chicago, Illinois			
Holland, Mich. USPO	Job	C & R 728	2 Apr 53
New boiler, stoker, etc.			
Business Service Center, General Services Administration, 620 Post Office, and Courthouse, Boston 9, Massachusetts			
Furnish all labor and materials for retubing heating boiler and new stoker, at U. S. Post Office, Athol, Mass.	Job	(BO-1-171-53)	6 Apr 53

U. S. DEPARTMENT OF STATE

Description	Quantity	Reference No.	App. Bid Date
Division of Central Services, Department of State, Washington, D. C.			
Fans, floor mounted, Westinghouse model 16 WAP or equal.	24 ea.	(CS-53-140-4-2)	2 Apr 53

CONTRACTS AWARDED THROUGH MARCH 20

Yards and Docks Supply Office, U. S. Naval Construction Battalion Center, Port Hueneme, California

Space Heaters, air circulating, oil fired.—672 ea., \$329,515.—The Viking Mfg. Corp., 1747 Chester Ave., Cleveland 14, Ohio.

Office of the Post Quartermaster, Purchasing and Contracting Division, Fort Bliss, Texas

Repair and replacement of evaporative cooling units.—Job, \$50,891.—Peeler-Hansen-Wilson Co., 1927 Mills St., El Paso, Texas.

General Stores Supply Office, 700 Robbins Ave., Philadelphia 11, Pennsylvania

Coolers: self-contained electrically operated.—415 ea., \$52,090.—Sunroc Co., Glen Riddle, Penn.

Headquarters, Air Materiel Command, Wright-Patterson Air Force Base, Ohio

Pressure gauges.—4619 ea., \$206,838.—U. S. Gauge Division, American Mach. & Metals Inc., Sellersville, Pa.

Ordnance Corps, Jefferson Proving Ground, Madison, Indiana

Ammunition conditioning, extreme temperature, box, parts.—Sea.—\$45,968.—Tenney Engineering, Inc., 26 Ave. B, Newark 5, New Jersey.

Corps of Engineers, U. S. Army, Philadelphia District, 121 N. Broad St., Philadelphia, Pennsylvania

Refrigeration equipment for 80 x 200 feet warehouse, ammonia type.—\$28,897.—Frick Co., Waynesboro, Pa.

General Services Administration, Business Services Center

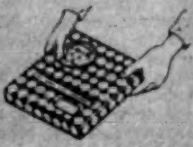
Region 2, 250 Hudson St., New York 13, N. Y.

Remodeling alterations etc., to heating, plumbing and electric systems, U. S. Post Office, Ogdensburg, New York.—1 Job, \$58,605.—J. J. Doyle Lbr. Co., Pickering St., Ogdensburg, N. Y.

THIS is the way to buy your copper tube PACKED INDIVIDUALLY in blue and red packages



EASY TO IDENTIFY CONTENTS
All pertinent information legibly shown on edge of carton for quick identification.



EASY TO HANDLE
Both carton and tube easier to handle than the coil alone—in stocking and in use.



EASY TO STOCK AND INVENTORY
Stock readily recognized at all times for filling orders or taking inventory.



EASY TO RESHIP
Individual cartons strong enough for re-shipment without master cartons.



TUBE ALWAYS PROTECTED
Tube wall protected against possible damage while in stock between periods when various lengths must be cut off.

WOLVERINE TUBE DIVISION

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Manufacturers of Tubing Exclusively

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...IT'S NEW! The Utility Case



This new self-service case is the answer to many merchandising problems. It is built in two sizes, 7'6" and 9'6" long, 20 1/2" deep and 22" high. Can be used in front of meat cases, in shelving or mounted on legs.

This item has been profitable for refrigeration men. We suggest you write for information about our entire line. Your territory may be open.



Sectional walk-in refrigerator with exclusive "no-draft" Filter-Flo coil.



THE C. SCHMIDT COMPANY
JOHN & LIVINGSTON STS.
CINCINNATI 14, OHIO